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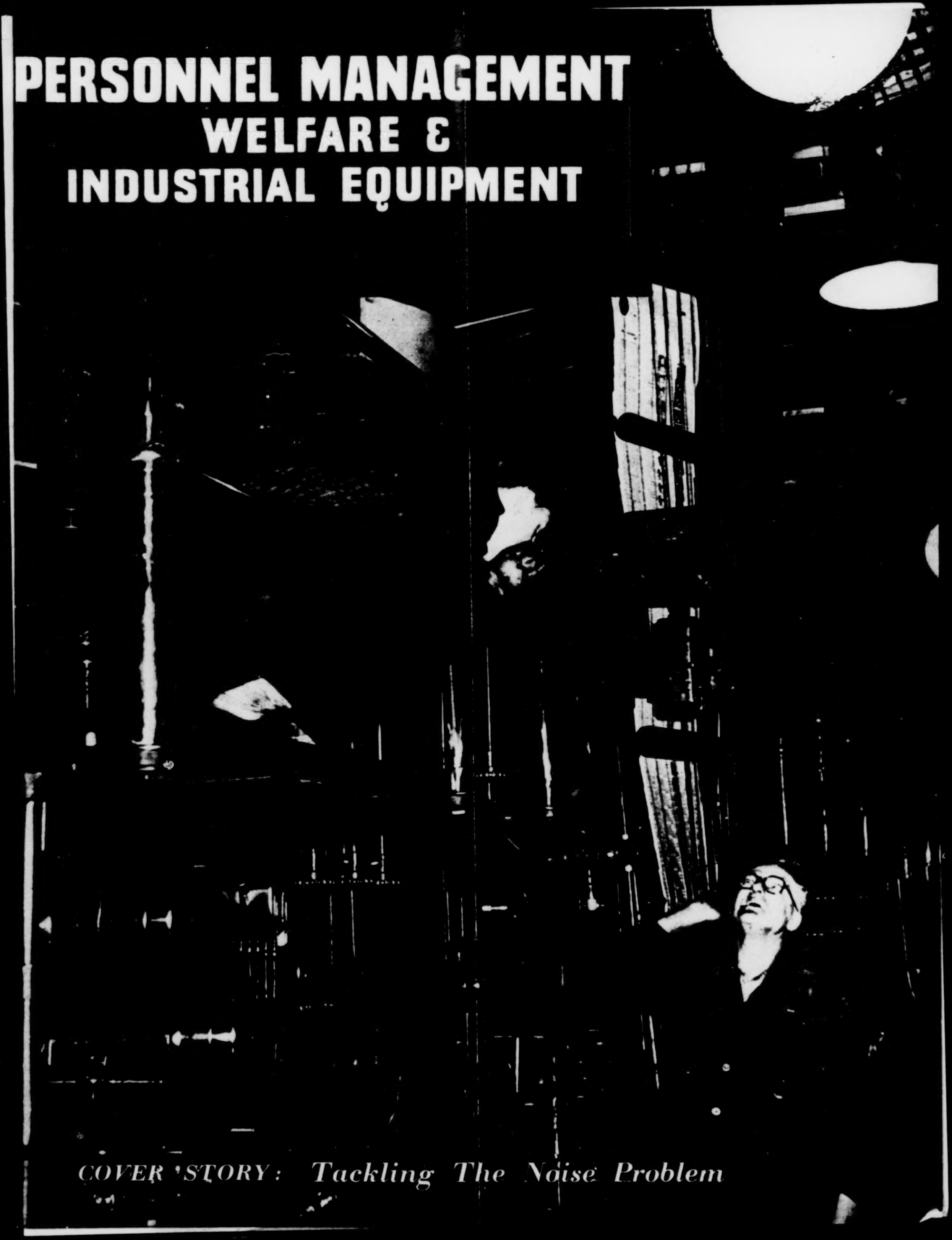

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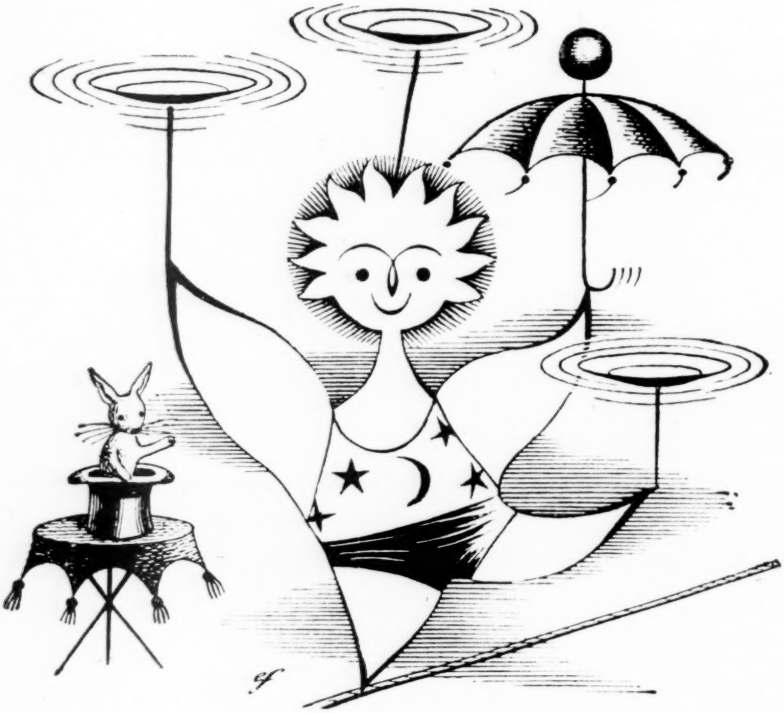

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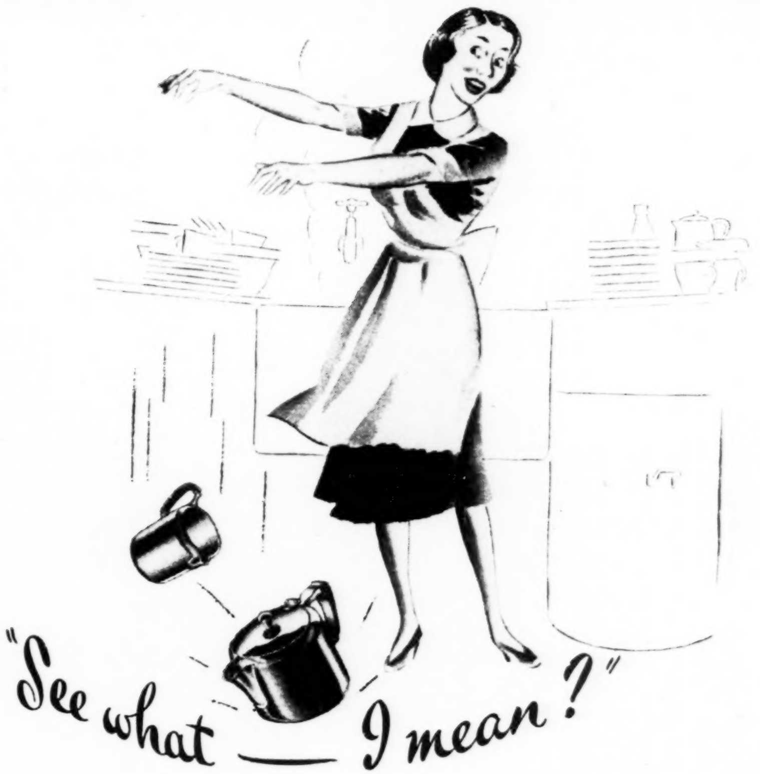
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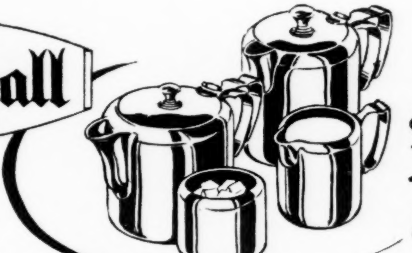

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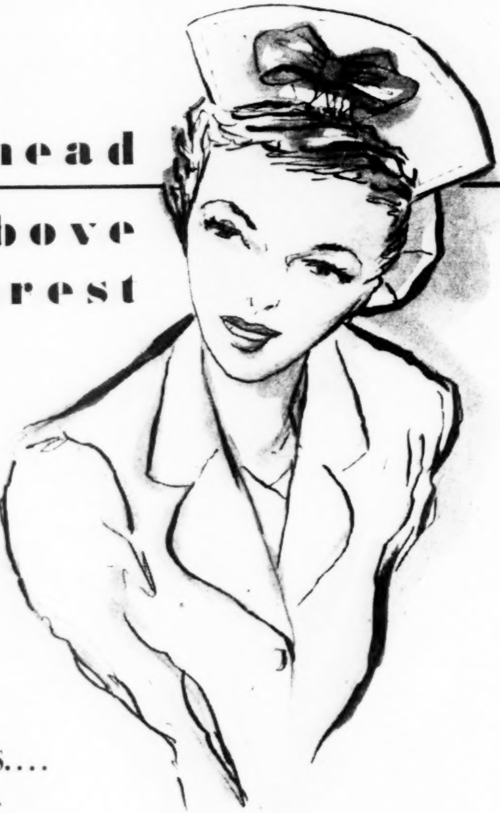

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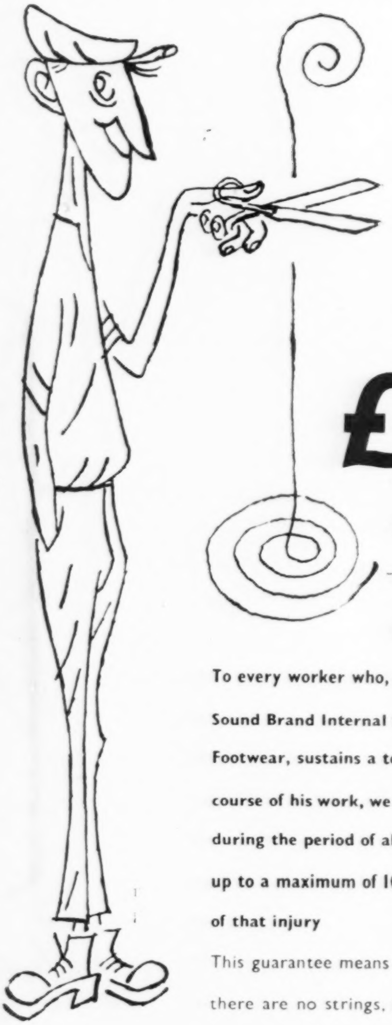

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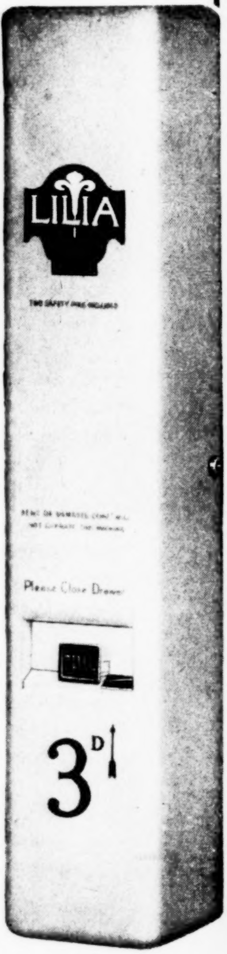

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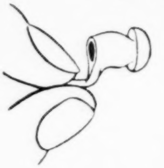

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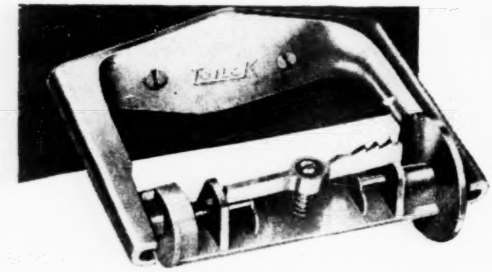

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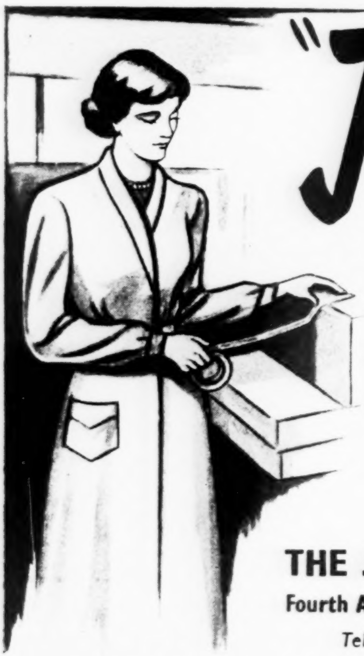

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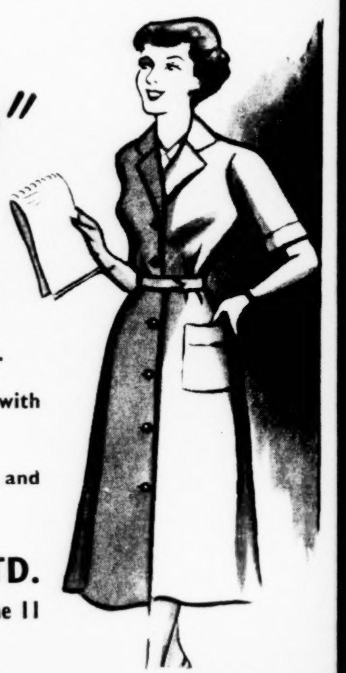

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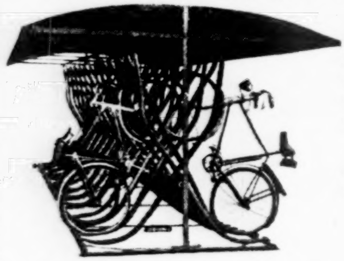

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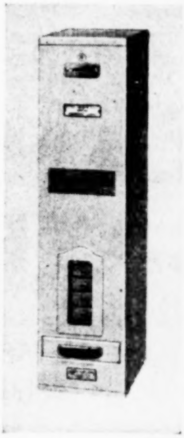

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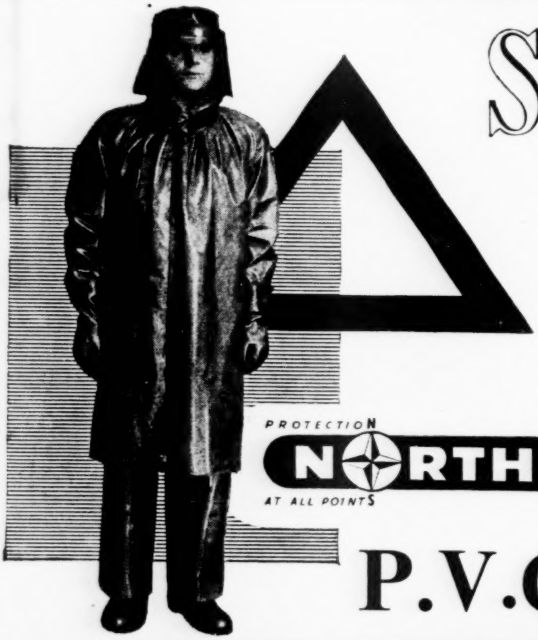

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PERSONNEL MANAGEMENT WELFARE AND INDUSTRIAL EQUIPMENT

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COVER: "You got cloth ears, Charlie?" yells a *Daily Express* maintenance man as he vainly tries to communicate with his workmates above the roar of the presses. Noise is a very real worry in many branches of industry, but much can be done to alleviate it. Methods of tackling the problem are described in the article on page 337.

Vol. 18, No. 141

Published monthly by Shaw Publishing Co. Ltd., 180 Fleet Street, London, E.C.4 (CHA. 8844) Incorporating "Civil Defence Journal and ARP & NFS Review" and "Welfare," London. Subscription rates: 20s. per year, post free in the U.K.; 25s. per year overseas.

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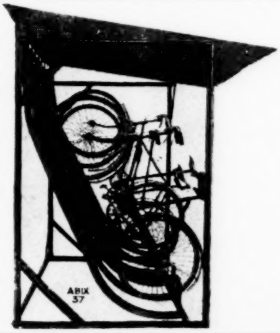

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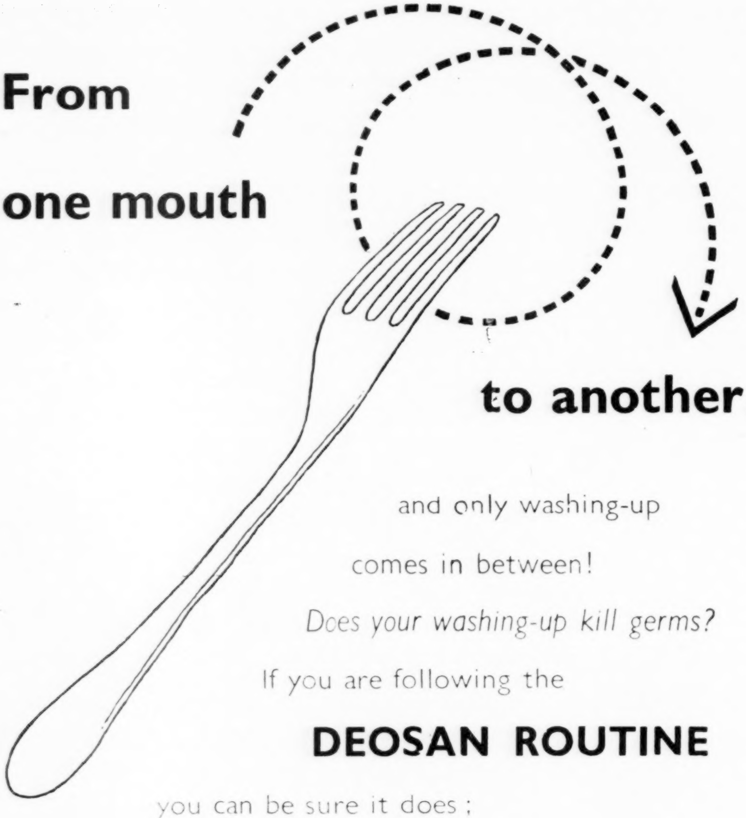

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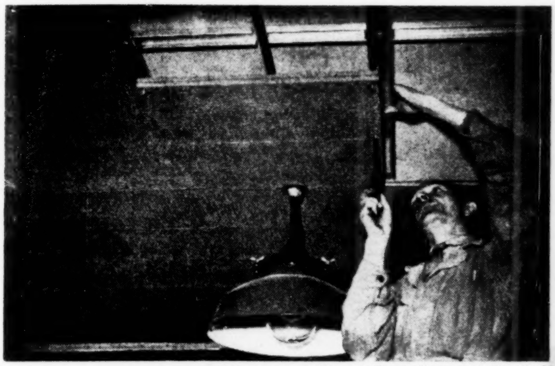
Tackling the Noise Problem

By A. G. THOMSON

In noisy surroundings, workers tire more quickly and become more prone to accidents than they should. The author suggests remedies whereby the factory may be made a quieter, and therefore more efficient, place to work in.



(Courtesy of Horace W. Cullum and Co. Ltd.)

Fixing fibre acoustic tiles to a laboratory ceiling. The perforations absorb sound waves.

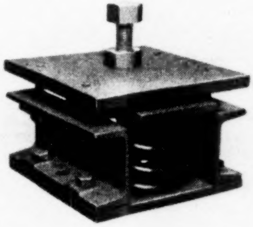
NOISE might be defined as unwanted sound. To a worker engaged on a task requiring close concentration, a Beethoven sonata played in an adjoining room might constitute an intolerable distraction. Few industrial processes are entirely silent, while some operations are so inherently noisy that conversation is impossible on the workshop floor and temporary deafness may be caused. Prolonged exposure to excessive noise may have permanent effects on the hearing.

The degree of noise which can be tolerated depends on the sensitivity of the individual, and there is as yet no exact means of determining the effect of a particular noise on those who hear it. It is believed, however, that the increasing prevalence of nervous disorders is due at least in part to noise. Though the human system is highly resistant, energy is used up in withstanding noise. It follows that in noisy surroundings workers tire more quickly and towards the end of the day tend to become more accident prone. In the interests of both welfare and efficiency, it is therefore desirable that the problem of excessive noise should be accorded the attention it deserves.

In general, the most desirable method of noise suppression is to deal with noise at its source by installing quieter plant and equipment. Since this is not always possible, the second line of attack is to segregate buildings in which quietness is desired from those where noise is created. Finally, noise may be minimised by the sound insulation of rooms and buildings.

Vibration communicated by a machine to the structure of a building may echo and increase the apparent noise produced by that machine within the room. A more serious problem may be created by the transmission of vibration through the structure of a building to produce noise in *other* rooms. In order to reduce the transmission of vibration it may be necessary to mount the machine on resilient supports of a design carefully chosen to suit the frequency of vibration. It should be emphasised, however, that incorrectly designed mountings may actually result in increased vibration.

By substituting individual motor drives for belts the noise of machinery has been considerably reduced. Machine manufacturers have also helped to suppress noise by replacing flap belts with continuous V-belt drives and bushes with ball races. Further improvements have been effected by the introduction of fine tooth helical gears and the provision of buffers and cushions whereever possible. Machines embodying geared drives in which steel is in contact with steel can be vastly improved by substituting intermediate gears made of fibre. In general, modern machines are more silent as well as more efficient than their predecessors. Age has an important bearing on noise, since bearings wear out, gears grind, and increasing vibration is set up.



Vibration means noise. To reduce it, machines can be mounted on resilient supports like this. But supports must be carefully chosen.

For machines and processes which are inherently noisy, the only treatment is partial or total insulation against airborne sound. The type of enclosure needed depends on the particular circumstances, and may range from a complete double-walled room for an engine test-bed, to a simple box around a noisy motor. To obtain maximum benefit from a sound-insulating construction, provision for the absorption of sound within the enclosure must be made. This might be achieved by lining the ceiling and upper parts of the walls with such materials as glass silk or slag wool behind perforated metal sheet, or with wood wool cement slabs. If a high degree of sound insulation is required, it is essential that doors and windows should be tightly fitting and of comparatively heavy double construction. If direct ventilation must be provided, the air can be led in and out through ducts which are split into a number of narrow channels by sheets of sound-absorbent material.

A noise nuisance caused by the cooling fan of an electric motor was successully treated by lining the duct with splitters of 1 in. thick rock wool covered with cotton sheeting and perforated metal. Similar measures may be adopted with other apertures. For example, noise escaping through an aperture left for a conveyor belt might be considerably reduced by providing narrow, absorbent-lined ducts around the conveyor on either side.

In the dynamometer test rooms constructed by the Ford Motor Co., for development purposes, several engines may be running simultaneously under different conditions, and it is important that the noise from each engine should be individually heard. Measures had therefore to be taken to ensure that the sounds made by the various engines should not tend to mingle or interfere with one another. Because of the presence of oil and petrol it was desirable to use insulating materials which would not readily soil. Preference was therefore given to the perforated plate type of insulation with rock wool backing, the perforated aluminium plate being subdivided into panels. This treatment —applied to walls and ceiling—has given very satisfactory results. When noisy machines or processes cannot be completely enclosed, conditions can be greatly improved by partial enclosures lined with absorbent material. For instance, the effect of a single noisy operation could be largely confined to a bench enclosed at the sides, back and above by absorbent screens. In extremely noisy factories a sound-insulated enclosure might be provided, where discussions could be held or the foreman could give instructions. Complete insulation is obtainable from booths constructed of sound-absorbent panels, which consist of alloy sections packed with glass fibres. The high absorption efficiency of this lining eliminates the necessity for a door. Once inside the open booth it is possible to converse in normal tones and even to use the telephone without any difficulty.

SIX WAYS TO QUIETER WORKING.

1. **Install modern plant.**
2. **Segregate noisy buildings.**
3. **Cut down vibration.**
4. **Enclose and insulate machines.**
5. **Provide sound-insulated booths for phones, etc.**
6. **Treat walls, ceilings with sound-absorbing material.**

BUT GET EXPERT ADVICE FIRST.

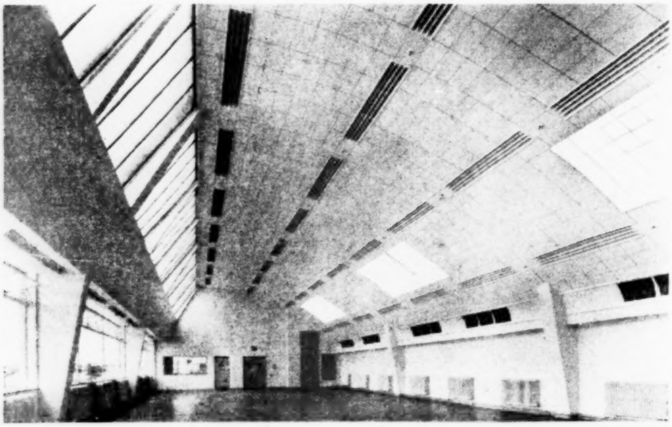
Where local measures cannot be adopted, a general absorptive treatment is sometimes helpful. Applied to the roof and the upper part of the walls, this treatment diminishes the noise from the more distant machines, so that each operator notices only that from his own machine. The psychological effect of this treatment is stated to be far greater that the actual reduction in loudness achieved.

Considerable noise problems are often presented by factory canteens, where the impact of knives, forks and other utensils on metal trays may make such a clatter that conversation is almost impossible. At the Greenford factory of Glaxo Laboratories Ltd., measures had to be taken to deal with this problem in two canteens, each of which required suitable acoustic treatment. One canteen is approximately square, the construction being such that there is a drop of several feet in the ceiling level on each side of the room. This variation in height had the effect of producing pockets which reflected more than 95 per cent of the sound created, the noise level being greater under the low ceilings than in the centre of the room, owing to the rapid reflection in a confined space. Acoustical conditions were so bad that when only a few people were handling trays, the clatter could be heard at every point of the canteen. Conversation could only be carried on by shouting.

Acoustic Tiles

In order to break up the reflection of sound, the upper sections of the end walls were fitted with acoustic tiles and the same treatment was applied throughout the ceilings. This treatment has effectively reduced the level of noise, a notable result being that sounds now seem to come straight from the articles which make them, without re-echoing. The other canteen is oblong and is housed in a building cent of the sound created, the floor is terrazzo and the walls are nearly all broken up by doors, windows, etc., which were placed so as to provide deep reveals to break up direct reflection. Acoustic treatment has been applied to the ceiling, and it is considered probable that this has reduced the noise level by about one-third.

The subject of industrial noise and its reduction is being investigated by the Building Research Station and the acoustical section of the National Physical Laboratory. The B.R.S. is concerned mainly with sound insulation and acoustics, while the N.P.L. is studying the characteristics and measurement of noise and the application of noise-reducing treatments. The N.P.L. has a mobile laboratory which visits factories for the purpose of measuring noise, ascertaining its physical characteristics, and advising as to the methods by which it might be reduced.



The architect of this research laboratory designed it to be acoustically efficient. The ceiling has been treated with sound-absorbing tiles.

The television set in the welfare office is a popular venue for Booth's employees.

This firm of hosiery manufacturers have not only ensured the efficiency and eased the lot of their workers by installing the most up-to-date machinery and equipment; they have also done their utmost for their workers' welfare and happiness. And they found that the best way to do the latter was to encourage their employees to take a big share in running the whole welfare organisation.

Our Workers Run Their Own Welfare Scheme

By **A. BOOTH,** *Director, A. Booth & Sons, Ltd.*

OUR welfare scheme started in a small way and has grown and developed, like the firm itself, over the years. It began as a spontaneous demand from employees for some sort of corporate life beyond the immediate day-to-day contacts on the job, and was given every encouragement by the management. Early efforts took the form of social and sporting events run by individual members of the staff. When this method was outgrown, it was unanimously agreed by employees that a welfare scheme should be organised and financed jointly by themselves and the company. *The result is that all our welfare activities are now run by committees composed of representatives of employees and management, and financed by contributions from both sides and by any profit resulting from sporting or social events.*

In the management's view, the important aspect of this scheme is the participation by a large proportion of our employees in the organisation and administration of the scheme and their acceptance of the responsibilities this involves. Many firms of our size—our normal complement is about 600 workers—employ a paid welfare or personnel officer to run this side of factory life, but this often results in the major part of the work being left to the paid official and the whole effort lacks the enthusiasm with which employees support their own endeavours.

The scheme is run by a main committee and a number of subcommittees. The main committee is composed of five representatives appointed by management and nineteen representatives of the employees elected on a departmental basis by secret ballot. The president is the managing director, the chairmanship is held by the assistant works manager, the secretary is in charge of personal records, and the treasurer is the firm's accountant. This committee approves all reports and recommendations of the various subcommittees and deals with all other matters which fall outside their scope.

The health and works committee is responsible for the first-aid department. We have a factory doctor on call, but day-to-day casualties are dealt with by trained first-aiders. Fortunately our accident risk is very slight and we have no need for full-time medical staff. The sickness benefit fund is also administered by this committee, who decide the amount of grant to be given in each case and undertake sick visiting and similar duties.

This committee is also responsible for the maintenance of a good working environment. It deals with such matters as heating, lighting, ventilation, accident prevention, washing facilities and similar amenities. Any complaint about working conditions is made to the committee representative in the department, who takes it up either direct with the management or with the committee. Here is an example of the way the system works. When the factory is being redecorated, the colour scheme for each workshop is chosen by the employees in that shop. They have to work there and we feel it is important that they should be satisfied.

The canteen committee deals with all complaints and general matters affecting the operation of the canteen, with the exception of finance. Complaints must first be made to the canteen manageress, but if no satisfaction is received they are passed on to the committee.

Much time and energy is devoted to entertainment of various kinds. The entertainments committee organises concerts, a children's Christmas party, and a pantomime. Another committee organises whist drives and dances. *One of the highlights of our annual Christmas dance is the election of our "personality girl" for the year. She is elected by the employees and during her year of office undertakes to show visitors round the factory, and represents*

Julie Andrews, radio star, congratulates the newly-elected "personality girl" (right) who for the next year will undertake many social duties on behalf of the firm.

the firm at the B.I.F. and at various local events. Yet another committee arranges our annual outing and bus trips to places of interest.

We have a thriving sports committee, which includes football, cricket, cycling, table tennis and archery sections, and is also responsible for maintaining our sports ground and organising our annual sports gala.

The horticultural committee holds a successful show every year, and the arts and crafts committee arranges exhibitions of employees' work from time to time.

One amenity which has proved very popular is the provision of a television set for the use of employees who have no television in their own homes. At least three or four nights every week, a group of employees and their families or friends foregather in the welfare office to watch the evening's programme. (See picture on previous page.)

Much of the work of a paid welfare officer is concerned with helping employees with their personal problems. In our case, this is also taken care of by the employees themselves. We have an advisory panel, run on lines similar to that of the Citizens' Advice Bureaux, and staffed by two of our own people—one man and one woman. The assistant manager of the finishing department is one of these; he had considerable experience with the Ilkeston Citizens' Advice Bureau during the war. Both these employees have done much valuable work.

Full Pay for Meetings

Attendance at all these committees is excellent, and in order that employees shall not suffer any financial loss while serving their fellow workers in this way, they are paid their usual wage rate while in attendance at meetings.

All wage rates are the subject of direct negotiation between management and shop stewards, and all matters affecting engagement or dismissal of staff, and all production questions, are outside the scope of the welfare committees.

Management has always taken a leading part in the operation of the welfare scheme, both by providing the necessary physical amenities, by giving financial assistance in special cases where the normal funds were inadequate, and by taking an interested and active part in the events run by the various committees.

SAFETY & ACCIDENT PREVENTION

Safeguarding Workers Against Radioactivity

By ALAN OSBORNE

Expanding use of radioactive materials in industry is now a foregone conclusion. In petroleum and chemical engineering, metallurgy, synthetic rubber manufacture, pharmaceutical investigation, industrial hygiene, and the luminizing trades, to mention a few, the usefulness of isotopes in process control has been recognised. These materials demand entirely new methods of employee protection—methods not yet imposed by law.

BEFORE describing standards of safety current in industrial laboratories today—standards not yet imposed by law—it might be as well to consider what the occupational worker is being exposed to and why precautions must be taken.

Radioactive materials give off continuously various kinds of rays which are useful to industry but dangerous to the human body. Some substances, like radium, possess this property in their natural state. But the world's supply of these natural radioactive substances is very limited: it has been estimated that uranium has disintegrated in the course of 4,000 million years by about half. Thanks to the atomic pile at Harwell, however, science and industry no longer need to rely on chemical elements for their radioactive materials, as any substances can now be artificially made radioactive by being inserted into the atomic pile. When these artificial radioactive substances emerge, they radiate rays of varying penetrative powers. Such substances are known as isotopes.

In handling isotopes, the scientist and worker has to be protected against the entry of excess quantities of the rays into his body. *Alpha* rays only travel two or three inches and only penetrate a few thousandths of an inch of flesh. But they might be harmful if inhaled, swallowed, or absorbed through a cut or scratch on the skin. *Beta* rays are more powerful and will penetrate the flesh up to about ¼ in. *Gamma* rays are still more powerful and will pass right through the body, while *neutrons* are the most powerful, though they are of concern mainly to workers engaged with production in the atomic pile. The results of failure to observe the health rules may not become apparent for a year or more. These rays can neither be seen nor felt. An excess of them will either—in the course of time—burn the flesh, or, more seriously, cause alterations to the bone structure of the body.

Before any worker is permitted to handle isotopes, he must undergo a thorough medical check. One of the results of over-exposure is anæmia, so that particular attention must be paid to blood counts, and the data entered on his health record card. Thereafter, at intervals of six months or a year, further counts should be taken for analysis by a pathologist. Any considerable differences between counts will automatically mean the transfer of the worker to another job where exposure to radiation is less. The transfer may only be temporary and is dependent upon the time it takes in each individual for the balance between the red and white corpuscles to re-adjust itself.

The second precaution is protection through personal hygiene. No worker should be allowed to take food or food containers into a laboratory where active materials are manipulated. Smoking should be forbidden. Workers should not work in the laboratory in their ordinary

Checking walls for dangerous radiation with the aid of a beta-gamma ray (or X-ray) monitor at the Telecommunications Research Establishment, Great Malvern.

clothes, a spare set of overalls, shoes, trousers, shirts, socks, and underclothes being kept in the locker room. No worker should borrow another's hand towel. Washing the hands before leaving the works should take two to three minutes.

In order to be sure that they are free from contamination, hands are checked with a monitoring instrument. Contamination may persist under the nails; in such cases, detergents like titanium dioxide paste or a saturated solution of potassium permanganate, followed by a rinse with 5 per cent sodium bisulphite, has been recommended by Harwell to the Medical Research Council.

Were it possible for protective clothing to give the worker full protection or for the handling of isotopes to be so conducted that every worker was completely protected from exposure to their rays, the above rules for personal hygiene would be superfluous. But the cost to industry of performing radioactive processes by remote electrical control would be prohibitive. It would also be unjustifiable, because medical research into radiological protection has deduced precise data on the maximum amount of exposure to radioactive isotopes that the body can take without harm.

Further, in making their recommendations on the maximum permissible level of energy absorption by the body from external radiation, the Sixth International Congress of Radiology in July 1950 worked out a table, which measures the safety level of each isotope. (It must also be borne in mind that radiation does not distribute itself evenly about the body.) Therefore, *the key to the protection of the worker lies in a number of checking or monitoring devices, which ensure that he is not being exposed to more than the tolerance of radiation laid down in the table.*

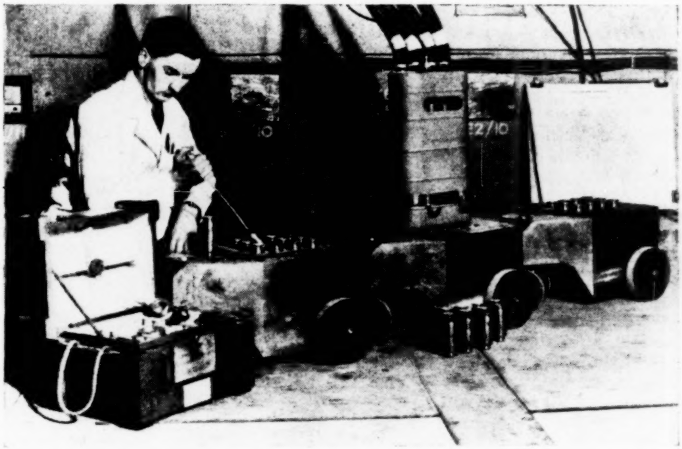
The first device is the film badge—an idea developed by the National Physical Laboratory some years back. Each worker carries on his overall a numbered badge, containing a strip of X-ray film. One section of the film is filtered, the other unfiltered. The filtered section registers the intensity of the *gamma* rays the worker has been subjected to in the course of the week; the unfiltered section records both the *gamma* and *beta* rays. The amount of radiation can easily be measured by the extent to which the film has been darkened. If the black portion is larger than the duties of the worker warrant, reasons why he has been subjected to exposure above the maximum permissible level can be immediately investigated. A secondary value of the film badge as a weekly check on dosage is that, in case a worker were to bring a lawsuit alleging personal injury from radiation exposure, the badge would be a most important exhibit in determining whether his working life had been kept within safe tolerances.

Another device for personal use provides a daily check. This is the pocket minometer, or electroscope, which is battery-charged daily to zero. The presence of radioactivity causes a gradual discharge, which the worker can check on a graduated scale for himself. The electroscope does not leave a permanent record, and, if accidentally exposed to humidity or dropped, it is unreliable.

The hand monitor for use after washing has already been mentioned. Two other personal monitors are the foot monitor for showing the presence of dust on the shoes and a clothes monitor for showing the same on overalls, which should be of the surgical type without pockets. Similarly, the rubber gloves always used should be surgical gloves

Laboratories may be built of wood, metal, or concrete, but their surfaces must be painted to prevent the absorption of any isotopes which might be spilled. For the same reason, waxed linoleum is recommended as an ideal material for floors. Monitors are used for periodical checks of laboratories.

Instruction on the choice of suitable monitors, on how to dispose of waste materials, and on how to protect personnel must be received from the isotope school at Harwell before any industrial organisation is deemed fit to receive its first consignment of isotopes.



How sender—Harwell—and consignee are protected. When the atomic pile is unloaded, isotope cans are pushed out of the lead container four at a time and dropped down hose pipes into a discharge can, which fits over a thick lead trolley. After this they are loaded for dispatch.

200 Firms Join in Factory Estate C.D. Scheme

By DENYS HAMILTON

What can be achieved by co-operation—fostered by strong and enterprising leadership—is exemplified by the North Acton (Middlesex) Civil Defence Industrial Organisation, which is preparing itself to protect the lives of 20,000 workpeople and the property of 200 firms occupying an area of half a square mile.

"LADIES and gentlemen, I would like to thank you for this very good response to the circular letter sent out to you. I am sorry that we have again even to think about such things as Civil Defence, but you all know that the position is quite serious. The very high circles consider that what we do in the next 18 months determines whether or not there will be a third world war. I feel, therefore, that it is up to us to do what we can in our industrial spheres, and to be prepared to defend ourselves as we did on the last occasion."

With these words, Mr. T. C. Parker, managing director of Acton Bolt Ltd., brought into being—for the second time—a Civil Defence organisation comprising 200 firms who firmly believe that heaven helps those who help themselves. They occupy a ½ sq. mile factory estate in North Acton, North-West London, and their workpeople number over 40,000. Between them they represent a great variety of industries, important to the nation always, but vital in war.

The Germans were well aware of this in World War II. Their bombers subjected the area to some of the worst devastation experienced anywhere in the country. The damage would have been even worse but for the Acton Bolt Ltd. fire brigade and spotters, who not only saved their own factory from destruction but also helped many neighbouring firms. Further, the company's C.D. control room—the first, and later the largest, in London—was connected to A.A. gun sites and supplied an "alarm within the alert" warning to 200 factories on the estate, thus saving an incalculable number of working hours. So there came into being a joint C.D. organisation which worked with great success until the stand-down in 1945.

There was, therefore, a sizeable fund of C.D. "know how" in North Acton lying fallow when Mr. Parker, convinced that it would not be long before industry was once again asked to prepare itself for a possible emergency, decided last April to ask his neighbours whether they would agree to resuscitate the co-operative scheme which had worked so well in wartime. First he sought, and obtained, the blessing of the local authority, county council, Home Office and Ministry of Supply. Then he invited all firms on the estate to send a representative to a meeting. The response was good, a twelve-man committee was elected, and after this and further meetings the following *modus operandi* was put into practice:

The activities of the North Acton Civil Defence Industrial Organisation were to be confined for the time being to training. All firms in the group were asked to seek volunteers, 6 per cent of their total employees being the minimum aimed at, who would all have to start with the 22-hour basic general course before proceeding to first aid and sectional training. A graded scale of subscriptions, varying according to floor area and number of employees, and ranging from two to forty guineas, was instituted to cover equipment costs and instructors' fees. (Initial expenses had been borne by Acton Bolt Ltd.)

Two training periods, both of eleven 2-hour weekly sessions, were offered to volunteers. The first, outside working hours, consisted of a lecture of 45 minutes, followed by a 15 minute (free) tea break and another lecture or demonstration. Payment recommended was 3s. an hour, with a bonus of £5 a year, payable quarterly, for efficiency and regular attendance. A similar train-

Training methods are realistic and thorough. Here is a squad receiving fire-fighting instruction from their C.D.O., Mr. W. Dewar.

ing period was offered during working hours without loss of pay.

Member firms were advised not to enrol men under 30 and women under 18, and to apportion their volunteers as follows: Wardens' section, men and women; rescue, men only; ambulance, men and women; pioneers, men; welfare, women only.

The first course began on July 2, 1951, and by the middle of January, 1952, 160 volunteers had completed the basic general course, and of these 60 had gone on to complete the full first aid course, and the remainder the basic first aid course. Sixty had got as far as stage I of their sectional training. At the time of writing, 250 volunteers are under instruction.

In charge of training and vice-chairman of the committee, until a change of job necessitated his retirement last month, has been Mr. W. Dewar, formerly chief warden of Ealing and assistant regional training officer for London region. For some time Mr. Dewar carried the instructional burden unaided, but recently Mr. W. Banham, chief engineer of the Cheesebrough Manufacturing Co. Ltd., qualified as a rescue instructor at Falfield. In addition, Mr. J. Radford (D. Napier and Co. Ltd.) and Major Eric Wall (T. Wall and Sons Ltd.) are qualified instructors who can be called upon when necessary. Mr. Dewar's place is being taken by a fully qualified instructor.

Recipe for Recruiting

Though not all firms on the estate have been able to raise volunteers, most are contributing to the group's funds, and the recruitment campaign continues. Mr. Dewar's recipe for recruiting is simple—"personal contact by someone who knows what he is talking about." His training methods are both expert and democratic; of their success there can be no doubt. These North Acton Civil Defenders are both keen and skilled.

At a time when apathy and an ostrich-like unwillingness to face reality are hampering the development of Civil Defence in many parts of the country, it is pleasant to be able to report the flourishing existence of an organisation such as this, in which public spirit and intelligent self-interest both play their part. It is also satisfactory to learn that other factory estates are seeking Acton's help in starting similar schemes.

Industry — and the Nation — Needs the Elderly Worker

By DR. L. G. NORMAN

Chief Medical Officer, London Transport Executive

The increasing shortage of labour in recent months has again directed attention to the employment of people who are over the normal retiring age. But what is "normal"? The prevalent custom under which men retire at or around the age of 65 needs revision, says our contributor.

EXPERIENCED supervisors know the special aptitudes of elderly workers. They wake early, are generally good time-keepers and have a conscientiousness and pride in work which sets a good example to young workers, who often seem to be more slapdash and less interested. A word of warning, however: it is very difficult to teach an old dog new tricks, and a *change* of occupation after the age of 55 is frequently unsuccessful.

Until humanity is more even in type and character, there can be no specific age at which elderly workers cease to give an economic return for their wages; each case must be judged on its merits. From the point of view of the elderly persons themselves, it is undoubtedly better for them to be usefully employed.

A survey of old people in Wolverhampton, undertaken by Dr. J. H. Sheldon, revealed the high therapeutic value of employment in delaying the development of the effects of ageing; it was felt to be in the interests of the elderly that they should continue in employment as long as they wished. This would be in the national interest, for in view of the changing age structure of the population it is desirable that as many workers should voluntarily remain in employment after they reach the retiring age as are capable of being usefully employed. Employers who now insist on a compulsory retiring age of 65, or under, might well reconsider this question in the new circumstances of full employment, manpower shortage and a rapidly ageing population. Employees who wish to remain in employment beyond the usual pensionable age should be free to do so, without direction or unfair pressure.

In the Wolverhampton survey, at least 80 per cent of the men over 65 and women over 60 were fully normal mentally; approximately 70 per cent were normal or better-than-normal physically.

Women have the advantage as regards occupation in that they can continue housework to an age considerably beyond that of normal retirement. Men who retire, apparently healthy, from a profession or business to which they have devoted their lives are often plunged into the vacuum of retirement and begin the slow process of dying from boredom. It is curious, though, that women, who live longer—most centenarians are women—should normally retire at an earlier age than men.

Government Policy

It is the declared Government policy to encourage the continued employment of elderly workers. At a time when industry needs every possible unit of manpower, there is a pool of labour here which should be more widely used, though the marked variation which occurs among individuals makes it desirable that the continuance in employment of elderly workers should depend upon a satisfactory work record together with a medical examination to assess fitness. It has been suggested that there should be an elderly persons' health service similar to that for schoolchildren.

In the United States, also, the problem of old age has become of increasing importance in industry. A large scale survey revealed that many elderly employees are allowed to continue at work on a year-by-year basis, with age 70 as the prevailing maximum. Most American industries plan to retain their ageing men if they are able to work, despite the usual 65-year-old retirement deadline. As one leading industrialist says, "You can't just plough 'em under."

Less Walking—More Production

A STOREKEEPER in the washing machine assembly shop of the Hotpoint Electric Appliance Co. Ltd., Old Fletton, Hunts, now takes only three steps where he used to take ten. This is one of the savings achieved as a result of floor re-assembly. Productivity has increased 30 per cent and there has been a reduction in usage of floor space of 10 per cent.

Motion study engineers recorded the movements of the storekeeper making collections for washing machine assembly, and redesigned the stores so that the time for collecting components has been reduced by 50 per cent, and the distance covered by 70 per cent. Paper work has also been streamlined.

In the assembly shop nearly all sub-assembly stages have been redesigned to make use of machine studied technique. By this means, sub-assemblies are built up with each hand and time saving of up to 75 per cent has been achieved.

Typical of the time speeding methods which have been introduced is one affecting the springs controlling the pressure of rollers which were formerly fitted by hand. These are now assembled at a point in the main assembly on a specially designed machine which automatically sets the springs at correct compression. As soon as this tension is reached the spanner performing the operation is automatically cut off.

In the final assembly a special purpose machine has been installed which enables a roller driving pin and drain tray rubber buffers to be assembled simultaneously by power supplied from air cylinders.

Foundry Forges Ahead

A NEW mechanised foundry at the Osborn Foundry and Engineering Co. Ltd., Sheffield, looks like breaking records. The managing director, Mr. F. A. Martin, led the first productivity team to the U.S.A., and many of the ideas he saw there have been incorporated in the new foundry which combines the best British and American practice.

The foundry produces castings weighing from a few ounces to 10 tons. Hand ramming now accounts for less than half the production of cores; the remainder are mechanically compressed, resulting in an increase of from three to forty cores an hour. Cores for colliery wheels, formerly rammed by hand at the rate of 30 an hour, are being made by the new process at 400 an hour. Output of castings from the works is almost two-thirds greater than in 1946, when post-war production began to get under way. Then, it took 307 man-hours to cast 1 ton of steel; today it takes only 150.

The use of roller conveyors and increased mechanisation in the sections producing small repetition castings has led to an increase in output of 50 per cent, with only half the number of workers formerly employed. There is also considerable saving in materials. For example, sand is now carried by overhead conveyor from the preparation plant, and surplus sand carried back by underground conveyor, so that 90 per cent of it is reclaimed as against 30 per cent when it was handled by barrow and crane.

(Condensed from *Factory Manager*, 10/51.)

At Home to Families and Friends

OVER 1,600 people were invited by the management of the National Cash Register Co. Ltd., to spend an afternoon at their head office with relatives and friends who work there. Trained guides pointed out the most interesting departments and explained exhibits. Guests were welcomed by a member of the board and given a tea party in the staff restaurant. Afterwards films were shown explaining the work and organisation of the company.

Special treats were laid on for small children who were in the care of experienced members of the staff. The children were given film shows while their parents toured the building.

Below: Visitors also saw work in progress at the company's Harrow Road (London) factory.

No Cash in the Bank

AT Oaken Holt, near Oxford, is a bank crammed with cheques and postal orders, but without a brass farthing. It is part of the Westminster Bank's training centre, and in it new entrants spend the final week of their course carrying out the duties of a normal branch staff. The model bank is realistically equipped with counter, scales, money shovels, accounting machines, telephones, etc. and a dummy-run of business is fed through for trainees to deal with. Anything from 400 to 600 items are dealt with in a day; some are deliberate traps. Trainees change their jobs in the bank every day. At the end of the day they have to balance their books as they would in a normal bank.

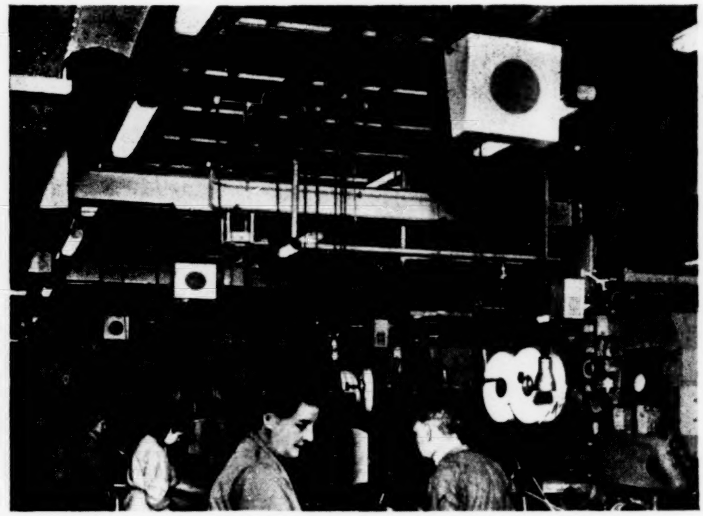
The course, which is residential, lasts for eight weeks for boys and five weeks for girls, and they learn various stages of the job by lectures, visual aids, and the handling of appropriate forms and books and the use of machines. About 1,600 boys and girls have passed through Oaken Holt, and the bank state that the scheme has proved even more successful than was hoped. Trainees receive full pay and expenses: board and lodging are free. Similar courses are available to cashiers, and managers. (Condensed from *Manchester Guardian*, 12/12/51.)

Safety in Rubber

TWO years ago the National Joint Industrial Council for the Rubber Industry started its accident prevention campaign. Detailed information of accidents has been gathered over this period.

The industry uses machines capable of causing terrible injuries, but such accidents are comparatively rare. Most common causes of serious accidents are "persons falling" and "materials falling."

"Heat" represents about 8 per cent



Part of the 500-loudspeaker industrial sound equipment installation—among the largest in Great Britain—recently installed at one of the factories of John Player and Sons Ltd., Nottingham. Amplifiers and control and gramophone-playing desk are in the former Civil Defence control room. Both music and announcements are relayed over the system, which is linked to a small amplifier feeding twenty-four loudspeakers in another factory in the town. (G.E.C. picture.)

of all accidents. While the majority of heat injuries are slight, some 3 per cent can be classified as serious. The following is an analysis of the causes: Hot moulds, 27 per cent; steam pipes, 19.2 per cent; hot presses, 8.10 per cent; hot vulcanising pans, 2 per cent; miscellaneous hot surfaces, 25 per cent; hot liquids, 7.7 per cent; hot steam, 6.9 per cent; fire, 4.1 per cent. It is clear that by lagging or fencing steam pipes 20 per cent of "heat" accidents could be reduced.

The problem of "hot moulds" is not quite so easy. Analysis shows, however, that the majority of burns occur between the fingers and elbow. Obvious answer is provision of insulated handling pads or gloves and gauntlets, but consultation of men on the job showed that even a thin shirt sleeve is valuable protection. The thin fabric slows down heat transmission sufficient to give warning before actual burning takes place. As many men prefer working with their sleeves rolled up, provision of loose sleeves would secure the same effect. (Condensed from *Industrial Welfare*, 11/51.)

Conserving "Know-how"

J. FIELDING and CO. LTD., box and carton manufacturers of Sydney, Australia, found that as older employees left the firm their "know-how" was being lost. They decided to form a research group to tackle the problem, with the basic objective of promoting efficient industrial management. The group circulate technical information among members and seek to develop production standards and practices. Membership is limited to managerial and supervisory grades; top management are admitted *ex officio*. A committee of five, elected annually, direct the group. Meetings are held monthly. There is no permanent chairman; all members take a turn.

Discussions cover all aspects of the company's organisation and operations, and recommendations are passed to top management for implementation. Among the group's achievements have been the re-organisation of the purchasing and stores control system, development of personnel management, introduction of the 40-hour week with organisation of shift work and transport, and control of lateness and absenteeism. Also, they have proved a valuable medium for spreading technical information and fostering inter-departmental co-operation. The group have now been operating for four years.

Essential to their success have been: Sympathy and support of top management, and confidence that their recommendations receive serious consideration.

(Condensed from *Australian Bulletin of Industrial Psychology and Personnel Practice*, 9/51.)

Ideas & News from House Magazines

International Get-together

Representatives from nine European countries, in addition to those from America, foregathered in London recently for the first Remington Rand European regional sales conference. Lectures and discussions on the history and future sales of electric shavers and portable typewriters continued for ten days. **(News.)**

Civil Defence

Over 500 employees of the South-Eastern Electricity Board are undergoing basic training in Civil Defence. A standard basic syllabus is used throughout the area and training periods are arranged to suit varying local conditions. **(Seaboard.)**

New Baths

A new "ablution centre," costing £20,000, was opened recently at Cochrane's, Stanton Ironworks associate. It accommodates 528 men, with two lockers for each person (one for clean and one for working clothes), twenty washbasins, four foot-baths, and thirty-two showers. Constant hot water is supplied, and lockers are steam-heated. Charge—with clean towels and soap—is 4½d. per week. **(The Stantonian.)**

More Baths

Two well-equipped bathrooms have been added to the clubrooms available to employees of James Templeton and Co. Ltd. Towels and soap are available for 6d., and appointments may be booked through the welfare department to avoid waiting. **(The Templetonian.)**

Goodwill

JUST before Christmas, the welfare officer of Newton Chambers and Co. Ltd., visited the homes of sixty widows of former employees of the company, to give them a gift of £1 each. This is an annual event, and among those he visited were one old lady of 90 and another aged 80. **(Thorncliffe News.)**

Higher Canteen Prices

USERS of the canteens at Vauxhall Motors Ltd., have been warned that, owing to increased costs, prices of meals are being raised. Meat dishes are to go up by 1d., fish by 1d., all vegetables and soup by ½d., salads by 1d., boiled puddings by a 1d. and other sweets by ½d., and Welsh rarebit by 1d. It is estimated that this will yield an additional monthly revenue of £1,036. **(Vauxhall Mirror.)**

Lagging a large diameter pipe with insulating strip in a confined space. An awkward job—but well worth while.

How to Make Immediate Savings in Fuel

By A FUEL TECHNOLOGIST

Major reorganisation of fuel-burning methods is saving 1,200 tons of coal a week—£200,000 a year—in a Tate and Lyle Ltd. sugar refinery. In contrast, a dye works achieved substantial economies (among other benefits) by simply fitting rough wooden covers to its vats. Somewhere between these two extremes most firms will find a method whereby they can very quickly cut their fuel consumption and add to their productive efficiency. But it may take a fresh eye to see what should be done. Here are some valuable tips.

IN the previous article (January, 1952) an attempt was made to explain the importance, from all points of view, of fuel efficiency—particularly in this time of persistent shortages. Here are some suggestions as to how fuel efficiency may be attained.

There are many approaches. At one extreme is that of long-term planning and reconstruction; at the other is the simple kind of effort described last month. As an example of the first we may quote Mr. Oliver Lyle, of the sugar refining firm. Mr. Lyle has thus described the outcome of a major reconstruction carried out by his firm:

> "The results so far are a great simplification of the process plant, a great improvement in quality, a great reduction in maintenance, a great reduction in labour. These combined benefits would have justified the whole proposition by themselves. But we also got a great saving in coal: we very nearly halved our coal consumption. Before the reorganisation started we burnt 25 tons of coal per 100 tons of sugar. After the reorganisation we burnt 13 tons per 100 tons of sugar. We saved 12 tons of coal per 100 tons of sugar. Let me tell you what that means in money today. In this refinery we refine 10,000 tons of sugar a week. We are therefore saving 1,200 tons of coal a week. We pay 65s. a ton for coal, so we are saving £200,000 a year."

This is saving on a grand scale, but necessarily involving planning for years ahead, the installation of much new plant, heavy capital expenditure, and high technical skill. At the other extreme is the reorganisation designed to ensure that the stoker often working single-handed and without supervision, is properly trained for his job so as to save coal, cash, and labour (his own labour!) and cut down smoke and grit emission.

For the average industrial undertaking in this country the way ahead lies between these two extremes. Reconstruction on a big scale is, for the time being, out of the question for most firms. And in any case it is *immediate* savings that the country so badly wants. These we can get.

We have referred to the importance of correct firing technique. Another example may well be quoted to show its relationship to increased output. In a jam factory there was trouble in keeping up the steam pressure. The difficulty was overcome by the adoption of efficient firing methods and not only did the fuel consumption drop by 20 per cent but the output rose by 36 per cent.

Visible steam is commonly a sign of waste due to leaky joints, ill-fitting valves and the like—easily seen and easily rectified—but if left alone highly expensive in fuel and causing much discomfort.

Attention to maintenance can pay handsome dividends. In a textile factory a test disclosed that neglect of furnace grates had caused the efficiency to drop to 45 per cent. When the grates had been repaired it rose to 70 per cent.

A common source of waste heat, and therefore of fuel, lies in boiler seating brickwork. Deterioration, through neglect, results in cracks that lead to heavy losses of useful heat. These are examples of the kind of thing that can be detected simply by intelligent observation and without the need for specialised technical knowledge.

Another common cause of waste is seen in unlagged pipes. "Seen" is the right word here, for we can easily see the cause of the waste of heat—and the remedy is simple. At one paper mill it was estimated that lagging of the steam pipes would save 100 tons of fuel in a year; by adopting the same expedient a laundry manager cut his fuel bill by 10 per cent in spite of his turnover going up by 20 per cent.

Lagging of steam pipes does more than raise efficiency by saving fuel; it also promotes comfort by preventing overheating. And there are other extensions of the same theme. An engineer visiting a dyeworks commented on the fact that the vats, which were heated by steam injection, were uncovered. As a result the dye house was intermittently full of drifting steam, the atmosphere was humid and permeated by fumes, windows and skylights were misted over (so obscuring the light), and the walls and floors were running with moisture. As an experiment, rough wooden covers were knocked together from packing cases and placed over the vats.

Most of the steam was eliminated from the atmosphere and there was an immediate gain in light and comfort. But the results of this change went much further. There were substantial savings in steam, and therefore in fuel, more precise control of processing was achieved and, as a result, a degree of uniformity in the finished product which it had not previously been possible to attain.

Start Saving Fuel Now by:

1. **Having your fireman properly trained.**
2. **Stopping steam leaks.**
3. **Keeping furnace grates in good repair.**
4. **Lagging steam pipes.**
5. **Enclosing a steamy process.**
6. **Making sure unneeded electric motors and lights are switched off.**
7. **Excluding draughts.**
8. **Insulating buildings.**
9. **Making full use of fuel and power instruments.**

The Fresh Eye

Such examples could be multiplied time and time again. There is an important lesson to be drawn from this experience; it is the value of the new eye being brought to bear upon the familiar background. *Under the pressure of day to day work it is all too easy to accept the accustomed as the inevitable.* But managements and engineers alike in these trying days may readily be forgiven this failing.

The fresh eye and the fresh mind will quickly perceive possibilities to which the "native" of the works is blind. What is wanted therefore is a readiness to invite criticism, to exchange ideas and to try, at least, the new expedients suggested by others. Interchange visits by works and process engineers offer fruitful field for mutual criticism and mutual aid.

(Courtesy of Fibreglass Ltd.)

Partly finished insulation of a factory roof. 4 in. glass fibre insulation is being used between the corrugated sheeting and the fibre board lining.

Fuel efficiency applies with equal force to gas and electricity. By switching off unnecessary lights and cutting out the idle running of motors an engineering firm reduced consumption from 58,000 to 36,000 units a week. Emphasis must be laid upon publicity and supervision—publicity to impress upon all operatives how much depends on their efforts and supervision to ensure that the means of saving are made known to them. It is only by adopting such means that intelligent co-operation of employees can be secured.

The conservation of heat in buildings by the exclusion of draughts and by structural insulation is as important as the direct conservation of fuel. In large establishments where materials and goods have to be moved frequently and in large quantities, doors which open and close automatically are a useful means of reducing heat losses. Structural insulation is all-important; fuel savings to be gained by adequate insulation are substantial and permanent. In addition the insulation of buildings means greater warmth in winter and less heat in summer. Variations in temperature from season to season and from hour to hour are "ironed out" with great advantage to the comfort and health of workers. Uniformity of temperatures is also of high importance in the processes of many important industries. In a large civil engineering works the insulation of a corrugated iron roof with fibreboard resulted in a saving of about two tons of coal a week, while during the first three winter months after the change the shop temperature was within the range of 48°-54° F., which compared with a range of 34°-43° F. the previous winter.

Emphasis has in this article been laid largely upon methods of fuel efficiency that may be adopted without outside assistance—upon what can be done by "taking thought." Certain important topics have not been touched upon in detail. For example, there is the important factor of instrumentation. In a surprising number of instances the provision of fuel and power measuring and recording instruments even in boiler houses is completely inadequate and operatives and engineers are therefore frequently working in the dark, or, at least, by guess work rather than exact measurement. *It is for managements to consider how far they are able, with their existing instrumentation, to tell with any degree of precision what power and heat they are getting for the fuel and power they pay for, how their power and heat are being used or where they are being used.*

There is a challenging little Ministry of Fuel and Power publication entitled *Fifty Questions for the Steam User* which those responsible for the conduct of industry might well consider as a means of self-examination. It is certain that in almost every case an investigation will reveal ways of increasing fuel efficiency worth pursuing to save money and labour, to improve the amenities of workers and, as often as not, to get higher outputs and a better product.

Law for Management

Leaving Without Notice: Readers' Questions Answered

By JOHN LAWES

The article, "Leaving Without Notice," which appeared in the August issue of this journal, has given rise to a number of interesting questions and observations from readers. The problem of the employee who left without giving notice was, of course, met in pre-war days, but it is "full employment" which has made it a major headache for management.

ONE of the questions related to the practice of withholding a man's national insurance card. So far as this point is concerned, it is necessary to make a correction to the August article. The statement that a man's card must be returned to him immediately upon the *de facto* termination of his employment is not quite accurate. The Collection of Contribution Regulations (S.I., 1948, No. 1274) provide that "where an employee leaves without any notice or intimation to the employer, the insurance card shall be returned to the insured person, or where this is impracticable, to the local office, within fourteen days of the termination of the employment." *Cards need not therefore be handed to employees at the time they leave, but can be retained by the employer.*

The question of the payment of wages appears to cause some difficulty and it will perhaps be useful if it is considered in detail. The main point is that normal procedure does not have to be disturbed merely because an employee leaves without notice. If a firm normally pays its employees a fortnight in arrear, a man who leaves without notice does not have to be paid up in full when he leaves; he can be required to call for his wages in the usual way on the pay days next succeeding in order to draw his money, and the fact that he has broken his contract does not alter his employer's obligations under it.

A further matter concerning payment upon which some confusion has arisen relates to a man's entitlement to wages for work done. The point here is that when an employee is engaged it is agreed that he shall be paid a stipulated sum for a stipulated period of work. Staff in positions of responsibility are normally paid monthly in arrear and, on doing their month's work, become entitled to a month's salary. Similarly, the majority of operatives are paid by the week and when they have completed their week's work become entitled to a week's wages which may be payable immediately or more usually at the end of the week next following. Sometimes a man's hiring is said to be daily or even hourly. Whatever the period of hiring of a particular employee, it is only by performing his side of the contract of service and working for the stipulated period that he becomes entitled to his wages.

When Wages Are Due

As we have said, the "quaritum merit" rule does not apply to contracts of service. Therefore, if a man is engaged under a weekly hiring from Saturday to Friday inclusive, he is not entitled to receive any wages for that week if he leaves his employment on Wednesday. His wages only become due when he has fulfilled his bargain by putting in the allotted hours at work. Going outside the law of employment, we can illustrate this position by taking the case of the artist engaged to paint a portrait. He promises to paint the sitter's portrait, while the person who commissions it promises to pay the price. The artist only becomes entitled to payment when he completes the whole portrait; he is not entitled to payment *pro rata* according to the number of the sitter's features which he paints.

Finally, a query has arisen over the statement that an employee who leaves voluntarily through being being placed in danger which he has not undertaken to run, has a claim against his employer. One of the common law duties which all employees owe to their employers is that of obedience. An employee must, in general, obey all lawful commands of his employer and, if he disobeys, his employer is entitled to dismiss him without notice. This rule is essential because all readers will have encountered the employee who can run the business far better than his employers!

However, an order which may involve the employee in physical injury can only be given when the employee has undertaken to do work which carries with it such a risk; the obligations of the steeplejack and the clerk are clearly different. Further, if an employer ordered an employee to work on a machine which was not fitted with a guard as required by the Factories Act, the employee would be entitled to refuse to obey the order and ultimately to treat the order as a breach of his contract of service.

The employee who was compelled to leave his employment in these circumstances would be entitled to damages as if he had been dismissed without notice. As is usual with a bald statement of the law, it may appear that the employee is not required to use common sense in exercising his rights. This, however, is not so; a man ordered by his foreman to do a job outside his normal duties, and which would involve him in unexpected danger, could not leave without notice and make a claim unless he had first drawn the attention of a more responsible official to the position.

A statement that an employee is entitled to "damages" if his employer acts in certain ways may cause alarm to those who have read of the heavy damages awarded for personal injuries caused through another's negligence. Where, however, a claim arises out of a contract of service, the measure of damages to which the aggrieved party will be entitled will be limited to the direct loss suffered. Damages are not awarded for loss of prestige or other consequential loss.

Therefore, if a man is dismissed without notice, he will be entitled to damages. The measure of the damages will be the amount of wages which he has lost through his employer's wrongful act; the maximum will be his wages for the notice period. If, however, he either gets a new job before this notice period has expired, or could have got one had he exercised reasonable diligence, then the sum he receives as wages for work done during the notice period will be deducted from that maximum. In practice, therefore, an award of damages is likely to be small unless a responsible employee on long notice is involved.

Injuries from Skylarking—and The Employers' Liability

By T. J. SOPHIAN, *Barrister-at-Law*

Though it is up to an employer to see that discipline is maintained on his premises, he is unlikely to be held responsible when his employees are injured because of their own irresponsible behaviour.

IS an employer liable for injuries suffered by an employee owing to skylarking by other employees? This interesting point was raised recently before the Court of Appeal. The plaintiff was an apprentice of sixteen. He was working at a vice when another apprentice approached him from the rear and placed a compressed air pipe near him. This apprentice signalled to another apprentice to turn on the compressed air and as a result the plaintiff was seriously injured.

It was argued that the injury was due to the negligence of his employers. The air pipe, it was said, was a dangerous apparatus to which the apprentices had ready access. The plaintiff also contended that there was not sufficient staff to maintain discipline and adequate supervision.

While undoubtedly an employer must secure the safety of his employees and prevent danger to them from the misuse of any dangerous article on the premises, there cannot be any absolute duty on him in such circumstances. In this particular case the apparatus had been in the same position for years and no accident had happened. There was no reason for the employers to anticipate that it was going to be used for fooling and the court considered that there was no evidence to show that the employers had failed to take reasonable care for the safety of their employees.

This case, therefore, seems to establish that where an employee sustains injury as a result of the skylarking of other employees, the employer cannot be liable, but perhaps a qualification is necessary. If employees are continually seen or known to be skylarking among themselves and to be doing acts which may be dangerous and which may cause injury, then clearly it would be the duty of the employer to take steps to secure proper discipline and to prevent the continuance of such skylarking and the commission of acts which may endanger others.

Eyes No Worse For Fine Limit Work

STRANGE as it may seem, the thousands of Swiss watchmakers whose close-up precision work is the most exacting in the world enjoy as high a standard of eye health as any farmer or plumber. This is the considered opinion of Dr. Ernst Weber, one of Switzerland's leading oculists.

"There are two secrets," said Dr. Weber. "Good lighting and 'hands that see'." Undiffused, natural light is best and the watchmaker's bench is never lit from behind but placed directly under large windows which allow maximum daylight to enter. "Watch craftsmen seem to handle intricate operations which they have mastered by the touch of their fingers."

Where artificial lighting has to be used, the lamps — generally fluorescent—are carefully placed.

Light reflections are eliminated as much as possible. The newest, air-conditioned and dust-free factory recently opened in Bienne, administrative capital of the jewelled lever Swiss watch industry, has installed exterior louvres to break up direct daylight. For close concentration on tiny watch parts the watchmaker uses a "loupe"—a kind of small magnifying glass adjusted to the eye and held in position by a swivel attachment that goes round the head or fixed to the glasses.

Constant use of the loupe does not in itself produce excessive eye strain, Dr. Weber states. It does, however, incline the Swiss watchmaker, even when he is not working, to bring an object close to the eye and look for fine detail. This does not mean that he is physically short-sighted; it is more of a spontaneous mental reflex.

Pay Safety Bonuses, Says Works Manager

"NO accident" bonuses, on the lines of those for production and good attendance, should be inaugurated to arouse the enthusiasm of the worker for safety in the factory, said Mr. E. P. Smith, works manager of Ioco Ltd., when he addressed the recent conference at Glasgow organised jointly by the Industrial Safety Division of Ro.S.P.A., the Scottish Groups Advisory Council and the factory department of the Ministry of Labour. With 700 delegates attending, this was the biggest industrial accident prevention conference ever held in Great Britain.

Mr. Smith said that today it was essential to reduce the number of industrial accidents, for humanitarian reasons, to cut production losses and to save litigation costs. If the "wise legislation" which had been framed were properly carried out, the number of accidents would decline considerably; but there were still too many employers who obeyed the letter of the law while having little or no real interest in the safety and well-being of their employees. Progress was hampered by our practice of industrial insurance, which caused many people to think that the cost of accidents was a matter not for the employer, but for the insurance company.

In his opening address, Mr. G. P. Barnett, H.M. Chief Inspector of Factories, said that the only hope of reducing the number of accidents lay not in making more regulations, but in intensive efforts from everyone in the factory. In a good accident prevention organisation, top management, supervisors and factory floor personnel all had a part to play, particularly the supervisors.

Educate Workers

If works safety rules were always to be observed, Mr. Barnett declared, workers should be properly educated in their application—and example was much better than precept.

Mr. D. H. Gordon, director, North British Rubber Co. Ltd., compared British accident prevention methods with those commonly met with in the U.S.A. and Canada. He explained that in Canada compensation for accidents came only from the industrial boards, which obtained their funds from a tax on employers. Each industry within a province had its annual rate of payment fixed on the basis of the number of accidents occurring within that industry in past years. This had the effect of bringing together all the firms in an industry to find out ways and means of cutting the accident rate and thus reducing the tax.

As for training the employee to be a safer worker, Mr. Gordon said there was a fundamental lack of "salesmanship" on this side of the Atlantic. In Canada and the U.S.A., much was done to "sell" the idea of safety to employees, and enthusiasm for the subject was developed in both management and worker.

The Lord Bilsland, M.C., chairman of the first session, paid a tribute to the work of Great Britain's thirty-five Industrial Accident Prevention Groups and said he hoped that as a result of the Scottish conference there would be an increase both in the number of groups and in their memberships.

Safety for Toolsetters

BELIEVED to be the first of its kind, a two-day course in accident prevention was held during December and January at Birmingham University for 120 power press toolsetters from small and medium-sized firms.

Manufacturers lent six different kinds of power press, as well as guards and tools. The syllabus covered the mechanical characteristics of power presses; accidents at power presses; methods of guarding, tool setting and guard testing; tool design; and maintenance and examination of guards.

Productivity Reports

Coal.—Although America has no urgent manpower problem in the coal-mining industry, management gives close attention to its employees. For example, a man's absence is followed up at home and help given in genuine domestic difficulty. Many companies maintain detailed personnel records backed up by close personal knowledge of individual workers.

While recognising that geological difficulties make it impossible for Britain to reach American output standards, the team urge more mechanisation and the adoption of American management techniques. They recommend specially the creation of the grade of "section foreman," who is in charge of a small team but is a salaried official and recognised as part of management. They also suggest

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Stars at a Party

THE film world was well to the fore at the annual staff party of Shaw Publishing Co. Ltd., publishers of Personnel Management, Welfare and Industrial Equipment and associated journals. British star Guy Middleton and his wife Anita Arden (right picture) presented prizes to competition winners, and Dorothy King, film and television actress, entertained with songs.

Among the attractions devised by the entertainments committee was a roving quiz (see bottom picture) complete with trailing microphone and prizes on the spot. Wrong answers earned a blast on a fearsome old bulb motor horn.

that the British industry should give particular attention to systematic training of management and the recruitment of specialists to assist line management. They were impressed by the American acceptance of informal consultation on the job as part of the normal process of management.

British miners, say the team, are at present better provided for than their American counterparts in matters affecting safety and welfare.

Packet Foods.—Like most productivity teams, this one found that American firms attain higher productivity than do British ones. Because of improved techniques, the American worker is required to put less physical effort into his job, but nevertheless he worked hard for monetary reward. The team recommend that British firms should take steps to measure productivity as a basis for assessing future results. They also suggest greater mechanisation, and particular attention to continuity of operation, bulk storage and conveying methods, and to layout of factories and offices.

New Post for Sir Wilfrid

SIR WILFRID GARRETT, former Chief Inspector of Factories, and later Principal of the Y.M.C.A. Adult College, has been appointed chairman of the Social and Industrial Council set up by the Church Assembly.

Objects of the council are to consider social, industrial and economic questions referred to it by the Church Assembly or by the Archbishops; to bring such questions to the attention of the Church Assembly and to indicate the moral issues involved; and to provide the Assembly with the material needed to form its judgment.

I.C.I. Labour Officer

MR. J. Hay, chief labour officer of Imperial Chemical Industries Ltd., retired on December 31, 1951, after 38 years with the company. He has been succeeded by Mr. E. T. Grint, who joined I.C.I. in 1929 as assistant labour manager of the explosives group.

A negotiator at 21—Mr. E. T. Grint, I.C.I.'s newly appointed labour officer.

Mr. Grint became a member of the National Council of Dock Employees at the age of 21, and had contact with eminent trade union officials such as Ernest Bevin and Ben Tillett. He has also had considerable commercial experience with I.C.I.

MRS. NICHOLS GETS A CHEQUE

Against a background of employees, after the presentation ceremony, are seen (left to right): Mr. W. H. Townsend (director), Mrs. Nichols, Mr. J. Frankenburg (director), Mr. M. F. Frankenburg (chairman) and Mr. E. Holden (director).

See story "50 Years' Service," below.

50 Years' Service

THE last of a family of five (father, mother, brother and two sisters) who have served the Greengate and Irwell Rubber Co. Ltd., Manchester, Mrs. F. Nichols, of 15 Dellcote Close, Salford, completed 50 years' service at the company's Greengate Works in March last year. In recognition of her achievement the company presented her with a tax-free £50 cheque at a ceremony held recently in the works canteen, where Mrs. Nichols and twenty-two of the company's pensioners were entertained to lunch.

Starting work as the errand girl for the company in 1901, Mrs. Nichols—known by everyone from the chairman of the company to the youngest worker as "Florrie"—has been the canteen supervisor for the last 15 years. Now grey-haired and 63 years of age, she intends to continue working, health permitting, until she is 65.

Safety Museum Director

MR. J. O. PEACOCK, H.M. Inspector of Factories, has been appointed Director of the Safety, Health and Welfare Museum, London, following the retirement of Mr. E. W. Murray. Mr. Peacock joined the Factory Department in 1930, after training as an engineer with the British Thomson-Houston Co., and was for some years deputy to Mr. Murray at the museum.

Revised Status for I.S.O.S.?

IN 1943 the Birmingham and District Industrial Safety Group suggested that an Institution of Industrial Safety Officers should be formed. Now the idea is to take effect, and it is proposed that the 500 members of the Industrial Safety Officers' Section of the Royal Society for the Prevention of Accidents shall withdraw from Ro.S.P.A. and become an independent body.

Only qualified, full-time industrial safety officers will be admitted to full membership of the institution, and even they will have to take an examination.

Health Scheme for 730,000

A REORGANISED medical service will soon be at the disposal of the 730,000 employees of British Railways (including the Road Haulage, Docks and Inland Waterways and Hotels Executives). Purpose of the reorganisation is to bring the service into line with the recommendations of the Industrial Health Advisory Committee.

The chief medical officer will have six regional and numerous area M.O.s. Big railway workshops will have a works M.O. Additional doctors will be required. They will receive a year's training in railway medicine before taking up their appointments.

Happier Workers?

THE annual report for 1950-51 of the Slough Industrial Health Service shows an increase in member firms. The medical director comments that the reduction in the rate of new cases indicates the success of the Service's preventive measures while the marked reduction in the incidence of diseases of the digestive system may reflect the improvement in canteen facilities in many firms—or even a happier working atmosphere.

Incidence of minor accidents remained high, and the importance of preventing these and their bad effect on production (and working time) was not yet fully appreciated by managements or workers.

Average number of member firms serviced by the general clinics was **124**; there were **13,466** new cases and **40,865** attendances. There were also **1,350** attendances at the orthopædic clinic, **1,455** at the chiropody department, and **39,240** at the physiotherapy department.

"Exchange Executives" Plea

DANGER of inbreeding and sterility in industry through a policy of promotion from within was stressed by Mr. John Marsh, director of the Industrial Welfare Society, at a conference for managers, executives and foremen held at Dunblane recently. New ideas and experience came from the interchange of managers in an industry, and this should be welcomed instead of resisted. Some companies had promoted wholly from within and had achieved a resistance to those dynamic ideas which led to greater productivity. He claimed that there should be an exchange system whereby executives in the **40** to **50** age group might transfer their pension rights to any new firm they joined.

Such a system would add enormously to the vigour and experience of industry as a whole. Pension schemes tended to tie down able but frustrated men in that age group.

Mr. Marsh's view was challenged by some firms present whose policy was firmly to seek foremen and managers from the ranks of their employees and not to go outside the firm until they had fully considered the suitability for promotion of their employees.

Record Wage Increase

WAGE increases in November, 1951, passed all records, and it is estimated that the year's increases in wage rates are almost equal to the rise in prices.

Aggregate increases in the weekly wages of about **3,096,000** workers during November was **£1,419,000**; more than for the whole of **1949**. The total increase for the first eleven months of **1951** was **£5,940,400**, and the main increases were amongst the following groups:

Engineering, **£1,311,600** (estimated weekly increase); transport, **£841,200**; building, **£572,000**; distribution, **£477,700**; agriculture, **£353,700**; public administration, **£258,300**. These figures do not include the latest miners' award which was back-dated to November, **1951**.

Effect of these increases was to raise the index of wage rates to **125** (June, **1947** = **100**) representing a rise of **10** points since January, **1951**; but this is still less than the rise in the index of retail prices (12 points) while the index for food prices alone has risen 17 points.

University Technical Courses

UNIVERSITIES should hold post-graduate courses for production study engineers, said Mr. C. T. Gould, M.I.I.E., chief production study engineer, Lever Bros. and Unilever Ltd., when he spoke recently to the London branch of the Institute of Industrial Technicians.

In the U.S.A. there were production study chairs at many universities; in Britain only one university recognised the urgent need for higher instruction in this branch of engineering. The institute should form a working party, with educationists and engineers to make recommendations on the subject.

Jobs for Ex-servicemen

ANNUAL Report of the British Legion for **1950-51** states that while unemployment hardly exists among men under **40** years of age, the employment of older men was causing concern. They were finding special difficulty in placing men over **55** and ex-regular officers. During the year the Legion placed **8,210** men and women in employment.

Size Worries Them

"BIGNESS" of industrial firms and trade unions is worrying Americans, believes Mr. J. C. W. Stead, production director of Batchelors Peas Ltd., who recently returned from a three-month international discussion on advanced business management at Harvard University. Young Americans, he says, feel there are no longer the opportunities for setting-up on their own like the Fords and Rockefellers had in the past.

Union's Industrial Survey

THE Transport and General Workers' Union is undertaking an "industrial survey" of materials shortages and prospects of future employment over a wide area of the Midlands.

A questionnaire has been sent to all district and branch secretaries and to shop stewards serving **50,000** members employed in engineering and allied trades. Members are asked whether material shortages exist and are causing unemployment or short-time working, or otherwise affecting workers' earnings. If the survey shows widespread shortages the details will be submitted to the Midland Regional Board for Industry.

"Mule Spinner's Cancer"

AT the annual meeting of the Cotton Industry Research Association the director, Dr. F. C. Toy, stated that it was hoped that legislation would soon be introduced to make compulsory the use of a certain type of oil in cotton spinning machinery which would eliminate "mule spinners' cancer." A report on the subject had been accepted by the joint advisory committee of the industry and was being forwarded to the Chief Inspector of Factories.

WAGES NEWS AND VIEWS

B.B.C. WORKERS—About **4,000** members of the B.B.C. permanent staff earning **£400** a year and upwards have received a salary increase of **10** per cent. Manual and weekly paid staff received increases early last year.

BUILDING WORKERS—About one million workers will receive an increase of 1½d. an hour from February **4**, under the sliding scale agreement.

CLERICAL WORKERS—More than **20,000** clerical workers in the gas industry have received wage increases ranging from **£5** to **£25** a year for men and from **£4** to **£20** a year for women.

CIVIL SERVANTS—Pay increases estimated to cost **£30** million a year have been awarded to **600,000** Civil Servants. They receive a **10** per cent increase on the first **£500** of salary; 5 per cent on any further amount between **£500** and **£1,000**; 2½ per cent on any amount between **£1,000** and **£1,500**.

ENGINEERING WORKERS — A claim for an increase of **£1** per week for women employed in engineering firms belonging to the Engineering and Allied Employers' National Federation has been submitted by the unions.

MUNICIPAL WORKERS—A claim for an increase of 2d. per hour, or 7s. 4d. a week, for about **400,000** manual workers employed by local authorities has been submitted to the National Joint Council for Local Authorities' Service (Manual Workers).

POST OFFICE SUPERVISORS—Increases of **£20** a year for men and **£15** for women have been granted to **14,000** post office supervisors. These are additional to the percentage increases granted to all Civil Servants from January, **1952**.

RADIO OFFICERS—The National Maritime Board has concluded an agreement which gives sea-going radio officers wage increases ranging from **£2** to **£3 15s.** a month. In addition, a special foreign service allowance starting at **5** per cent of basic pay and rising to **10** per cent will be paid to officers on ships permanently abroad.

How to Make a Good Cup of Tea

Can *your* canteen staff make a good cup of tea? Or are there grumbles when the welfare committee meets? Managements can ensure that their factory and office tea breaks are really helping to increase output if they see to it that their canteen staff follow the procedure described below by WINIFRED GODE.

THE importance of "a good cup of tea" as a morale booster in industry has long been recognised, but what has not always been recognised is the importance of that word "good."

Can *your* canteen staff make a good cup of tea? Judge their performance by the following five golden rules laid down by the Tea Bureau in their training course for industrial caterers:

1. **Use good tea and enough of it.**
2. **Use freshly drawn, freshly boiling water.**
3. **Warm the teapot or multipot.**
4. **Take pot to boiling water, not water to pot.**
5. **Time the brew. Tea should be brewed, not stewed.**

The extra cost of that best quality tea works out at very little per cup, and makes all the difference between a satisfied and dissatisfied customer. Type of tea used is a matter of personal taste, but small leaf is better for bulk tea-making as it infuses more quickly.

Having bought good tea—look after it. Keep it tightly covered, store it in a cool, dry place, and away from strong aromas. If you use tea-chests, keep them off the ground and at least 6 in. from the walls so that air can circulate freely.

Best results, and economy in the making, are ensured by weighing the amount of tea required for each pot. Tea experts agree that the ideal recipe is 2 oz. of leaf to one gallon of boiling water, infused for six minutes; but most industrial customers would find this too strong. Good tea, acceptable to most workers, can be made with 1¼ oz. of leaf to one gallon of water, infused for ten minutes. Careful timing of the brew is most important, for this ensures uniformity of the product, another important factor in successful large-scale tea-making. Time of infusion is calculated from the moment the leaf is completely covered with boiling water, until the removal of the leaf from the multipot.

Adequate supplies of freshly boiling water are essential to good tea-making. There is ample equipment on the market to provide varying quantities of boiling water sufficient for one making. Water must flow freely, and hit the leaf with some force, but there must not be a long drop between the tap of the boiler and the pot, or the temperature of the water falls. Before adding the water, warm the pot. Stir the tea with a wooden spoon to spread its strength uniformly throughout the whole container. The use of hard or soft water makes no difference to the quality of tea required. It only affects the appearance of the tea; hard water usually produces a bright, clear colour, and soft water a duller, darker effect. But the use of water softeners reduces the quality of the tea.

Adding the Sugar

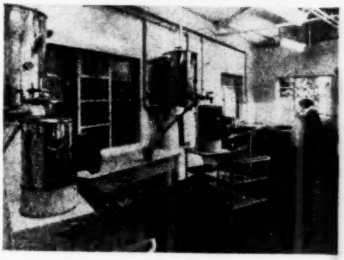
Sugar should be added to the tea in syrup form. Again, measure sugar carefully—⅛ or ⅕ oz. per cup, mix it with hot tea; the use of water weakens the brew. Add this syrup to the pot, after removing the leaf, and stir well. Do not infuse tea and sugar together. This practice brings out the tannin.

Ideally, milk should be put separately into cups with a standard measure. Experience has shown that this adds little more than five minutes to a forty minutes' trolley service, and the improved taste and appearance of the tea is worth the extra time spent. It also saves milk, as only the exact amount required need be used. However, in many factories today this method is not practicable as workers bring their own cups. Milk must therefore be added to the multipot. Where this is done, it is most important that the milk is not added until the last possible moment before service. Where trolleys are used, the milk should be put in separate containers and added to the pot just before the first cup of tea is drawn off. Some multipots on the market have separate attachments which deliver a measure of milk together with the tea.

Serve all the tea in the pot at once, and as quickly as possible after it is made. This ensures that it reaches the customer fresh and hot. Once air enters the multipot the tea begins to deteriorate.

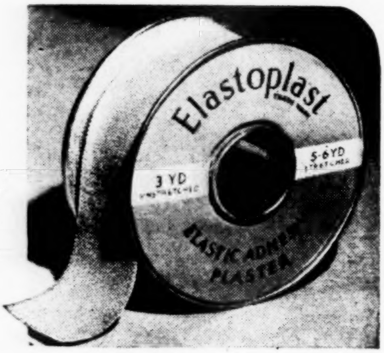
Good tea cannot be produced from

(*Continued on page 360.*)



Hygiene in tea-making and service is stressed in the training given to industrial catering staffs at the Tea Centre. (Top picture.)

An example of good layout for a tea-making station—at the Lion Works, Woking. (Bottom picture.)



FABRIC OR PLASTIC

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Industrial Surgeries now have the choice of two kinds of Elastoplast Plaster. A fabric plaster made from lightweight cloth with lengthwise elasticity, and the new plastic type which stretches all-ways and provides 100% waterproof protection when such is required. Both plasters provide adequate support for the injured part and have excellent adhesive properties. Full particulars or samples of either plaster will be sent, upon request, by the Medical Division of the Manufacturers.

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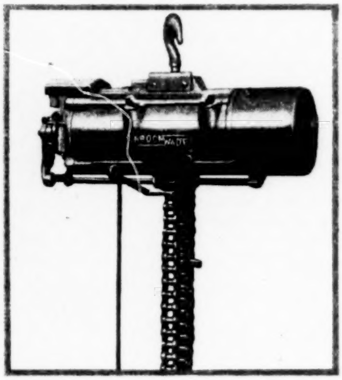
New Industrial Equipment

EXECUTIVES' SURVEY OF AIDS TO INCREASED PRODUCTION

Readers who wish to have more particulars of any of the products referred to in this section are asked to write to the Editor, quoting the reference number which appears at the end of the paragraph.

We are always glad to receive details of new products suitable for description here, i.e., equipment that helps in any way to raise output.

HANDLING



Light Air Hoist

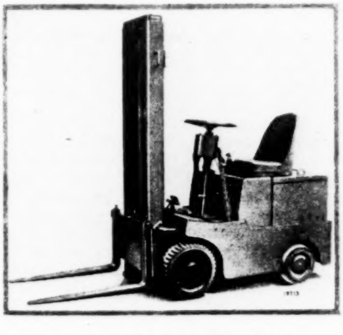
A NEW light-weight Broomwade pneumatic hoist is rated by the manufacturers to lift twenty-five times its own weight The use of aluminium alloys wherever possible in its construction has made it light in weight without sacrificing the strength of previous models. The hoist is fitted with a control for varying the lift speed from "inching" to the maximum of 26 ft. per minute. Operation is by a one-hand lever and the lift height can be up to 9 ft. Safety limits on each end of the lifting chain automatically return the control to neutral and apply the brake to prevent over-operation. Two models of the hoist, with capacities of 5 and 10 cwt., respectively, are available.

(PM/459.)

Tight-turn Stacker

THE Forklift 10 is an electric drive stacking truck giving maximum manoeuvrability with minimum size, for work in confined spaces. Turning radius is only 5 ft. with 30 in. long forks fitted.

The truck can be supplied with either 8, 9 or 10 ft. lift masts; the load capacity being 10 cwt. The distance between the forks can be varied from 2 ft. to 7 in. for different types of load, and the mast can be tilted through 11 deg. , Perfect stability is claimed for the truck even when the maximum load is fully raised with the mast tilted forward. Various attachments, including a crane unit, can be supplied, and the statutory lighting for road work, or a spotlight, are available as extras.



The Forklift 10 is easy to handle and maintain, and the batteries require only 17 units for a complete charge.

(PM/460.)

Industrial Tractor

ORIGINALLY introduced for normal agricultural use, the Ferguson tractor has since appeared in numerous guises. Latest version has been modified for work in coal yards, docks and factory premises. Considerable re-styling has been carried out, and mudguards, two independent brake systems, lights and a horn make it suitable for road work. A robust spring bumper protects the front of the tractor, and the mudguards can be quickly detached when necessary. Models are available with either a 28 h.p. petrol engine or a vaporising oil power unit.

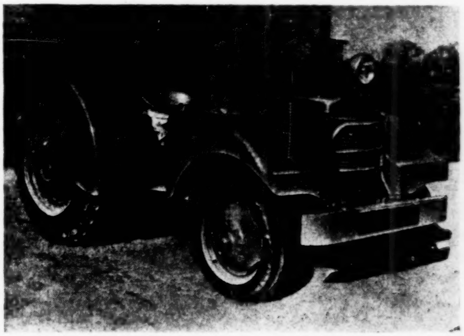
(PM/461.)

Junior Loader

NEWEST addition to the Fourways range of portable conveyors is the Junior Model. It has a maximum delivery height of 10 ft. and a speed of 50 ft. per min. The conveyor is mounted on four 14 in. pneumatic wheels and can be worked and moved by one man. The boom is operated by hydraulic jacks controlled by a hand pump unit. Maximum load at any one time is 6 cwt., though individual load units must not exceed 2 cwt. The machine will handle up to 50 tons an hour.

Power is provided by a ¾ h.p. electric motor, which can be run off a 230 or 400 volt supply. The slatted track is reversible and steel "flights" are fitted at 4 ft. intervals to support the load.

All the operating mechanism and controls are included in the body of the machine and are covered by a sliding panel. The standard finish is bitumastic grey and the dimensions of



This modified agricultural tractor is designed for use in coal yards, docks and factory premises.

the conveyor are 17 ft. long by 3 ft. wide. Weight is 18 cwt. **(PM/462.)**

Nut Storage Pan

THE handling and storage of small components, such as nuts and bolts, in bulk can be simplified by using tote pans. A new type now available has large handles that make lifting easy, and they can also be supported by rods in a storage rack.

The pans are a robust one-piece steel pressing, and provision is made for fitting indentifying labels. Dimensions are 16 in. long and 8 in. wide. **(PM/463.)**

POWER TOOLS

Flexible Shaft

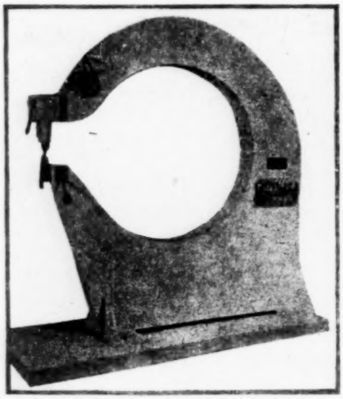
DESIGNED for toolmaking and other precision work, the new Derota is a flexible shaft workshop unit. Self-contained except for a power lead, the unit can be hung on a hook near the work, and is controlled by a six-speed foot pedal. The shaft is made of braided stainless steel and incorporates a chuck to hold various types of work-head. Maximum operating speed is 10,000 r.p.m.

Power Rail

SUPPLYING current to portable power tools on production lines or in assembly shops without having trailing cable that is a nuisance and can easily be damaged, is a problem not easily overcome. The Runtact power duct offers a solution. It consists of a number of current-carrying busbars fixed in an overhead duct with a wheeled trolley carrying brush contacts running in the duct. The tool is connected to the brushes by a hanging cable fitted with a control panel. As the operator moves around with the tool, the trolley runs easily along its rails providing power wherever it is needed. The ducting is supplied in 10 ft. sections and these may be joined up to provide any length required. The busbars are rated at 100 amps. and two or three can be fitted in each duct. A continuous earth bar, fuse box and switch are also provided and a hook suspended 4 ft. beneath the carriage can be used for hanging up the tools when they are not in use.

The ducting can be supported by angle or flat steel strips fixed to the roof and welded steel couplings are supplied for joining up the sections. **(PM/464.)**

Unorthodox Trimmer



THE design of the Pullmax trimmer is unorthodox, but it makes the machine particularly suitable for handling large, complex or awkwardly shaped work. The thickness of plate that the machine will cut depends upon the tensile strength of the material and varies between .012 and .016 in. The alloy steel cutting tools are easily adjusted and interchanged and are of sufficient length to allow of several re-grindings.

Motor operates in 220/380 volts three phase A.C. and the mechanism of the trimmer is entirely enclosed and submerged in oil. The upper tool is moved with a lever and the lower one is pneumatically operated. **(PM/465.)**

LIGHTING

Portable Daylight

Portable fluorescent lighting is available from this new lamp, which operates from battery or mains.

A NEW development in fluorescent lighting is the Proscon Handilamp, a portable unit that makes this type of illumination possible in places where it cannot normally be used.

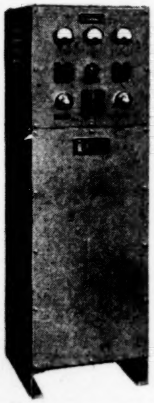
Three models of the lamp are available; a self-contained battery type which works off two 45 v. dry batteries; another model operating directly from the A.C. mains, and a third model that can use either of these sources as its power supply.

A 9 in. 6-watt fluorescent tube is fitted in the front of a sheet steel box that houses the batteries and/or the chokes, etc., and a curved plastic window protects the tube and reflector from damage or breakage.

Weight of the lamp varies between under 5 lb. for the mains-only model to just over twice as much for the model that uses either mains or batteries. A plastic handle, push-button on/off switch and a light green stove enamel finish make the Handilamp pleasant to look at. **(PM/466.)**

Emergency Lighting

THE picture on the next page (top left) shows the charging and control cubicle—nerve centre of the Keepalite automatic emergency lighting system. This system incorporates trickle charging of battery, quick charging by hand control after a discharge, and automatic switching of the emergency lights when the mains supply is interrupted. The use of static rectifiers eliminates the need for rotating machinery, and



the whole apparatus (apart from the battery) is self-contained. **(PM/467.)**

FINISHING

Replaces Nickel Plate

GOVERNMENT orders have recently been issued forbidding the use of nickel plating except for a few special types of work. This fact lends particular interest to a new product, Nicklit, that gives an imitation nickel finish by immersion in a bath of warm chemical.

The finish is suitable for use on brass or copper bases; steel can be treated if it is first coated with either of these metals. Nicklit is not a deposit but a changing of the surface of the material. As a result it cannot be scratched or peeled off and it will not tarnish, say the makers.

Application to highly polished or precision finished surfaces is possible for the treatment will in no way affect their lustre or dimensions. The Nicklit finish is claimed to be cheaper than nickel plating because no electrical current or equipment is used and the work can be done by unskilled labour. Analysis of the plating solutions is also eliminated. **(PM/468.)**

JIGS AND TOOLS

Shear Strength

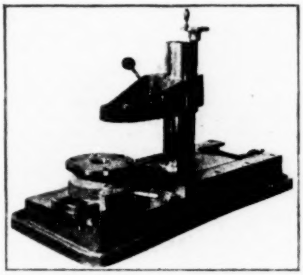
A NEW shear for cutting metal bars and plate up to ¼ in. in thickness and rounds up to ¾ in. in diam. uses a rack and pinion gear to increase six-fold the force that can be applied with the 24 in. long handle. Accessories enable the Hilshear to be used in a vice, on an anvil, held in the hands or fixed to a girder. The jaws are sprung to eliminate gaping and bevel cuts of up to 45 deg. can be made without distortion.

The body is a drop forging and the steel blades can be replaced when they become worn. The complete tool weighs slightly over 13 lb. **(PM/469.)**

Universal Jig

FUNCTION of the Revlac universal drill jig is to reduce the number of jigs normally required for medium-sized batch work. The tool can be mounted on radii or multi-spindle drilling machines to allow accurate jig boring without the use of other machinery. An indexing head giving two, three, four and six locations is normally fitted to the jig, but heads giving larger numbers of indices can also be supplied.

The vertical pillar supporting the bridge casting is mounted on a sliding carriage. By moving this, centres of from zero to 19 in. in diameter can be obtained. The hardened, ground brush fixed in the bridge acts as a liner for any extra brushes, and a vernier scale can be provided to simplify comparative readings of the bush and indexing table. The table has a diameter of 7½ in. and is drilled with six holes to take the bolts for securing separate holding plates. The bridge can be raised by means of a screw, to a height of 7½ in. above the indexing table. **(PM/470.)**



AIR CONDITIONING

Directed Air

A NEW wall inflow unit can be mounted in various positions to give a close control of the direction of the air supply. Variable angle blades on the impellor increase this control still further.

The units have a built-in fan with 15 in. blades that deliver 2,100 cu. ft. of air a minute. Smaller units for use in offices, hospitals etc., have an output of 1,400 or 1,000 cu. ft. per min., and lower fan speeds. Regulating switches can be fitted to any of the units so that air volume and velocity can be varied at will.

A fixing flange slides along the body of the ventilator and can be adapted for any wall up to 13½ in. in thickness. The unit is approximately 22 in. square and a reverse switch enables it to be used as an extractor if necessary. **(PM/471.)**

Attracts Dust

EVERYONE has tried the experiment of rubbing a fountain pen with cloth and then picking up small pieces of paper by means of the charge of static electricity induced on it. This principle is employed in a new device that collects dust and other air-borne dirt by giving it an electrostatic charge and collecting it on an oppositely charged surface.

The Electrostatic Dust Precipitator consists of four parts: a fan for circulating the air; an ioniser for imparting the electric charge to the dust particles; the collector unit to attract and hold the dust and a high-tension power unit that steps up the mains voltage and converts it to D.C.

It is claimed that the device will remove up to 95 per cent of the solid matter suspended in the air that passes through it. Smoke, mist, pollens, bacteria, etc., are all effectively dealt with even if the particles are microscopic. By removing germ-laden dust, the unit cuts down the risk of infection in factories. When the precipitator is in use in a normally contaminated atmosphere, the collector unit will need removing and washing about once a month. More frequent cleaning is necessary when the contamination is heavier. The Precipitator can be supplied in either a metal or a polished wooden case. **(PM/472.)**

Summary of Official Publications

READERS' GUIDE TO ACTS, STATUTORY ORDERS, NEW RULINGS AND AWARDS CONCERNING INDUSTRY AND PERSONNEL

STATUTORY INSTRUMENTS

No. 2076. The National Insurance (Industrial Injuries) (Insurable and Excepted Employments) Amendment Regulations, 1951. Dated November 27, 1951, made by Industrial Injuries Joint Authority under Pt. III, First Schedule, National Insurance (Industrial Injuries) Act, 1946(a), and Sub-section (1), Section 80, of that Act. *H.M.S.O. 3d.* (Amend National Insurance (Industrial Injuries) (Insurable and Excepted Employments) Regulations, 1948, by extending insurance under the 1946 Insurance Act to certain people employed in connection with the inspection of mines. Operative from December 10, 1951.)

No. 2163. The Aerated Waters Wages Council (England and Wales) Wages Regulation (Amendment) Order, 1951. Dated December 6, 1951, made by Minister of Labour and National Service, under Section 10, Wages Councils Act, 1945(b). *H.M.S.O. 4d.* (Amends Order A.(43) increasing statutory minimum remuneration payable. Operative from December 21, 1951.)

No. 2189 (S.105). The Police Pensions (Scotland) Regulations, 1951. Dated December 11, 1951, made by Secretary of State for Scotland, in conjunction with the Treasury, under Sections 1 and 3, Police Pensions Act, 1948(a), and Sections 43 and 44, Reserve Auxiliary Forces (Protection of Civil Interests) Act, 1951(b). *H.M.S.O. 6d.* (Amend the Police Pensions (Scotland) Regulations, 1949, by assimilating in general the pension rights of all regular members who serve temporarily in the Armed Forces to the rights of those who served in the 1939-45 War. Also amend certain provisions regarding widows' pensions and children's allowances. Operative from January 1, 1951.)

No. 2192. The Police Pensions Regulations, 1951. Dated December 11, 1951, made by Secretary of State, in conjunction with the Treasury, under Sections 1 and 3, Police Pensions Act, 1948(a), and Sections 43 and 44, Reserve and Auxiliary Forces (Protection of Civil Interests) Act, 1951(b). *H.M.S.O. 6d.* (Amend the Police Pensions Regulations, 1949, by assimilating in general the pension rights of all regular members who serve temporarily in the Armed Forces to the rights of those who served in the 1939-45 War. Also amend certain provisions regarding widows' pensions and children's allowances. Operative from January 1, 1951.

No. 2225. The Sack and Bag Wages Council (Great Britain) Wages Regulation (Amendment) Order, 1951. Dated December 17, 1951, made by Minister of Labour and National Service under Section 10, Wages Councils Act, 1945(b). *H.M.S.O. 3d.* (Amends Order S.B.(33) by increasing statutory minimum remuneration payable. Operative from January 4, 1951.)

No. 2233. The Aliens (Employment) (Former Prisoners of War) (Revocation) Order, 1951. Dated December 17, 1951, made by Secretary of State, under Para. (2), Article 17, Aliens Order, 1920(a). *H.M.S.O. 2d.* (Revokes the Aliens Order of 1947 which placed restrictions on the employment of former prisoners of war. Operative from January 1, 1952.)

No. 2252. The Fire Services (Ranks and Conditions of Service) (No. 5) Regulations, 1951. Dated December 19, 1951, made by Secretary of State, under Paras. (a) and (b), Sub-section (1) of Section 17, Fire Services Act, 1947(a). *H.M.S.O. 3d.* (Increase fees payable to retained members; allow for reduction of retaining fees to members who do not fulfil their obligations; provide for payment of hourly rate after first hour, instead of after first two hours, on duty. Operative from January 1, 1951.)

No. 2253. The Police (No. 2) Regulations, 1951. Dated December 19, 1951, made by the Secretary of State, under Section 4, Police Act, 1919(a). *H.M.S.O. 2d.* (Amend Regulation 8 of the Police (Consolidation) Regulations, 1948, to give chief officer discretionary powers in regard to disqualification for membership of the police force; increase overtime allowance; allow service in the Armed Forces which counts for pension purposes to count for pay also; continue supplementary allowances for further year; increase boot allowances; increase detective duty allowance; provide that promotion examinations in the Metropolitan force need not be held in 1951. Operative from December, 1951.)

No. 2254. The Police (Women) (No. 2) Regulations, 1951. Dated December 19, 1951, made by Secretary of State, under Section 4, Police Act, 1919(a). *H.M.S.O. 2d.* (Amend Regulation 4 of the Police (Women) (Consolidation) Regulations, 1948, to give chief officer discretionary powers in regard to disqualification for membership of the police force; allow service in the Armed Forces which counts for pension purposes to count for pay also, increase overtime, boot, and detective duty allowances. Operative from December 31, 1951.)

No. 2263. The Tin Box Wages Council (Great Britain) Wages Regulation Order, 1951. Dated December 19, 1951, made by Minister of Labour and National Service under Section 10, Wages Councils Act, 1945(c). *H.M.S.O. 4d.* (Revokes Orders X.(32) and X.(36) and fixes new statutory minimum remuneration payable. Operative from January 11, 1952.))

No. 2295. The Rubber Reclamation Wages Council (Great Britain) Wages Regulation (Amendment) Order, 1951. Dated December 21, 1951, made by Minister of Labour and National Service under Section 10, Wages Councils Act, 1945(b). *H.M.S.O. 2d.* (Amends Order R.R.(27) by increasing statutory minimum remuneration payable. Operative from January 11, 1951.)

No. 2296. The Hollow-ware Wages Council (Great Britain) Wages Regulation (Amendment) Order, 1951. Dated December 21, 1951, made by Minister of Labour and National Service, under Section 10, Wages Councils Act, 1945(b). *H.M.S.O. 3d.* (Amends Order H.(56) by increasing statutory minimum remuneration payable. Operative from January 11, 1952.)

GENERAL

Prevention of the Propagation of Flame in Aluminium Dust Explosions. Issued by the Ministry of Labour and National Service, Factory Department, December, 1951. *H.M.S.O.* 1s. *3d.*

Civil Defence. Atomic Warfare Instructional Diagram No. 1. Effects of Airburst Atomic Bombs. Issued by the Home Office, December, 1951. *H.M.S.O.* 4s.

Reinstatement in Civil Employment. (Under National Service Act, 1948.) Pamphlet No. 87. Safeguarding of employment. Dismissal of Army Reservist called up for fifteen days' training under Section 1 of Reserve and Auxiliary Forces (Training) Act, 1951. Claim for compensation under Section 51 of National Service Act, 1948. Whether dismissal by reason of liability for training. Interpretation and application of statutory provisions. *H.M.S.O. 2d.*

INDUSTRIAL COURT AWARDS

No. 2352 National Health Service. Reference: Claim for increased salary scales for senior administrative officers in the hospital service. Award: The Court awarded new salary scales for all grades, but the question of "London weighting" was deferred for consideration by all the Whitley Councils concerned. (23/11/51.)

No. 2353. Fair Wages Resolution. Reference: Dispute as to whether the company were observing the requirements of the Fair Wages Resolution in regard to certain Air Ministry contracts. Award: The Court found that the Fair Wages Clause did not apply. (7/12/51.)

No. 2354. Fair Wages Resolution. Reference: Dispute as to whether company were observing the requirements of the Fair Wages Resolution in regard to certain Air Ministry contracts. Award: The Court found that the Fair Wages Clause did not apply. (7/12/51.)

No. 2355. Government Industrial Establishments. Reference: That increased lead rate from 18s. to 20s. for progress chasers in the Ministry of Supply be operative as from October 3, 1947. Award: Claim not established. (11/12/51.)

No. 2356. Entertainment Industry. Reference: For salary increase from £9 10s. to £12 10s. a week for members of B.B.C.'s Opera chorus. Award: Salary to be £11 per week as from March, 1951. (18/12/51.)

INDUSTRIAL DISPUTES TRIBUNAL

No. 55. Service Bonus of Building Trade Maintenance Workers Employed by a Firm of Tube Manufacturers at Birmingham. Claim: Dispute over reduction of bonus payable to certain classes of workers. Award: In favour of union's contention that bonus should not have been reduced. (16/11/51.)

No. 56. Remuneration of School Janitors Employed by the Lanark County Council. Claim: For wage increase of £1 per week. Award: Claim not established. (17/11/51.)

No.57. Remuneration of Chief Officers of Durham County Council. Claim: For implementation of recommendations of the Joint Negotiating Committee for Chief Officers of Local Authorities in respect of salary scales. Award: In favour of claim. Minimum commencing salary of chief officers concerned was fixed at £2,700 with three annual increments of £100. (20/11/51.)

No. 58. Wage Rates of a Welder Employed by an Engineering Company at Carnoustie. Claim: For increase of 11s. a week for welder in accordance with engineering agreement. Award: In favour of workman. (21/11/51.)

No. 59. Wage Rates of Certain Workers Employed by an Engineering Company in Renfrewshire. Claim: That semi-skilled workers whose basic rate is 4s. or less under the skilled rate should receive 11s. a week increase in accordance with specific engineering agreement. Award: In favour of workmen. (21/11/51.)

No. 60. Rates of Wages of Certain Workers Employed by an Engineering Company at Halifax. Claim: For increase of 11s. to toolroom workers in accordance with agreement of November, 1950. Award: In favour of workmen. (23/11/51.)

No. 61. Rates of Wages of Certain Classes of Indoor Workers Employed by a Firm of Constructional Engineers in Lanarkshire. Claim: For increase of 11s. a week to certain workers in accordance with engineering agreement of November 28, 1950. Award: Claim not established. (26/11/51.)

No. 62. Rates of Wages in the Fellmongering Trade in Scotland. For substantial wage increase. Award: Increase of 2d. per hour for adult timeworkers ; 7 per cent increase for juveniles; and 7 per cent increase on existing piece rates. (27/11/51.)

No. 63. Wage Rates of Dressers and Plate Moulders employed in the Engineering Industry. Claim: For application of engineering agreement of November 28, 1950, to plate moulders and dressers. Award: Dressers coming within the definition laid down by N.A.T. Award No. 213 should be regarded as coming within the terms of Clause 4(a) of the agreement of November 28, 1950, but other dressers and plate moulders should be dealt with under Clause 4(c). (28/11/51.)

No. 64. Remuneration of Patternmakers Employed in the Engineering Industry. Claim: That bonus supplement applicable to timeworking patternmakers be merged into the base rate, and that an adequate minimum incentive be provided for patternmakers employed on systems of payment by result. Award: Claim not established. (28/11/51.)

No. 65. Remuneration of Certain Workers Employed by a Firm of Precision Engineers at Hove. Claim: For increase of 11s. a week to certain workers in accordance with engineering agreement of November 28, 1950. Award: Claim not established. (4/12/51.)

No. 66. Rates of Wages of Box and Packing Case Makers Employed by a Cable Making Firm in Lancashire. Claim: Dispute regarding rates of wages of box and packing case makers. Award: The company shall pay rates agreed by the Joint Industrial Council of the Wood Box, Packing Case and Wooden Container Industry to all skilled packing case makers. (4/12/51.)

No. 67. Remuneration of Domestic and Similar Grades of Staff Employed in Sanatoria. Claim: For increase of 2d. per hour for ancillary grades employed in sanatoria. Award: Claim not established. (10/12/51.)

No. 68. Remuneration of Certain Workers Employed by an Aircraft Manufacturing Company in Lancashire. Claim: For increase of 11s. a week to skilled workers in the experimental department in accordance with engineering agreement of November 28, 1951. Award: Claim not established. (10/12/51.)

No. 69. Wage Rates of Certain Workers Employed by an Aircraft Manufacturing Company in Lancashire. Claim: For increase of 11s. a week for inspectors in accordance with engineering agreement of November 28, 1951. Award: Claim not established. (10/12/51.)

No. 70. Minimum Rate for Metal Dressers in the Bradford District. Claim: For increase of 8s. in weekly basic rate. Award: Claim not established. (11/12/51.)

NATIONAL ARBITRATION TRIBUNAL

AWARDS

No. 1723. Selling Price of the "Debit" of Agents of the Co-operative Insurance Society Ltd., in the Blackpool and Preston Districts. Claim: Dispute over selling price of debits. Award: The Tribunal awarded the terms of an agreement reached between the two parties on December 11, 1951, on the lines set out in the Tribunal's letter of June 11, 1951. The Society also accepted the Tribunal's recommendation that an ex-gratia payment be made to their former agents. (11/12/51.)

THE MONTH'S DATES

Bradford Industrial Safety and Welfare Association

February

13 "Electrically Interlocked Guards." Fordham Cooper, B.Sc. Y.E.B. Main Showrooms, 45/53 Sunbridge Road, Bradford. 7.30 p.m.

British Institute of Management

19 "The Problems of Management in a Government Department." Sir Edward Ritson. London. 5.30 p.m.

Carlisle and District Management Association

12 "Working Together With Other Men." Professor Aubrey Burstall.

Industrial Welfare Society

1-4 Foremen's Conference. Grange-over-Sands.
4 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
4-6 Industrial Law Tutorial. Birmingham.
5 "Lifting and Handling for Men." 48 Bryanston Square, London, W.1. (One-day course.)
6 "Lifting and Handling for Women." 48 Bryanston Square, London, W.1. (One-day course.)
7 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
7 "Canteens." Bristol.
11 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
11-15 "Human Relationships in Industry for Junior Executives." 48 Bryanston Square, London, W.1.
11-Mar. 3. "Office Training." 48 Bryanston Square, London, W.1. 6 p.m. (Course.)
12 "Personnel Records." Portsmouth.
13 "Canteen Brains Trust." 48 Bryanston Square, London, W.1.
14 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
14 "Personnel Records." Cardiff.
14-Mar. 6 "Industrial and Factory Law." 48 Bryanston Square, London, W.1. 6 p.m. (Course.)
15-18 Foremen's Conference. Ashridge.
18 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
19 "What we are doing in our Company about Training for Management." 48 Bryanston Square, London, W.1. 2.30 p.m.
19 "The Establishment and Maintenance of Sports Grounds." 48 Bryanston Square, London, W.1. (One-day course.)
20 Advisory Meeting. Liverpool.
21 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
21 Advisory Meeting. Manchester.
21 "Canteens." Peterborough.
21 "Supervisor Training." Sheffield.
25 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
28 Discussion Group for foremen, chargehands and management trainees. 48 Bryanston Square, London, W.1. 6 p.m.
29-Mar. 3 "Joint Consultation—How are we Doing?" St. George's Hotel, Cliftonville.

Institute of Industrial Administration

8 "Case History in Relation to Personnel Management." Wm. S. Porteus. Leeds.
13 "What Britain is Doing in Management." N. C. Rimmer. Leicester. 7 p.m.
26 "Works Management." Management House, Hill Street, London, W.1. 7 p.m.
28 "Organisation and Methods of Work." K. S. Jefferies. Southsea. 6.30 p.m.

Institute of Industrial Supervisors

5 "The Foreman's View of Management—and Management's View of the Foreman." College of Technology, The Newarke, Leicester. 7.30 p.m. (Jointly with Institution of Works Managers.)
7 "Modern Foremanship." H. R. Harbott. Welbeck Hotel, Nottingham. 7.30 p.m.
7 "Some Aspects of Materials Handling in Industry in the U.S.A." E. G. Taylor, B.Sc. Technical College, Hyde, Manchester. 7.30 p.m.
7 "Supervision and Management." S. Waugh. Grand Hotel, Sheffield. 7.30 p.m.
7 Management Forum. Canteen, Lines Bros., Merthyr Tydfil. 7 p.m.
12 "Industrial Relations." T. Wylie. Canteen, Carpet Trades Ltd., Mill Street, Kidderminster. 7.30 p.m.
13 "American Foremanship Report." W. J. Izzard. Grammar School, West Bromwich. 7.30 p.m.
14 "The Foreman and the Factories Act." H.M. Inspector of Factories. Great Northern Hotel, Leeds. 7.30 p.m.
14 "Human Relationships in Industry." H. W. Canadine. The Polytechnic, Regent Street, W.1. 7.30 p.m.
14 "Production Incentives." F. B. Wilmott. Chance Technical College, Crocketts Lane, Woolwich, London, S.E. 6.30 p.m.
21 "The Foreman's Relations with the Personnel Department." T. M. Houston. Technical College, Cardiff. 7 p.m.
26 "Factory Morale and Discipline under Full Employment." L. Leonard. Canteen, Carpet Trades Ltd., Mill Street, Kidderminster. 7.30 p.m.
26 "Time Study: Its Uses and Effects." J. A. Cullin, B.A. College of Technology, The Newarke, Leicester. 7.30 p.m.
28 "American Foremanship Report." W. J. Izzard. Chance Technical College, Smethwick. 7.30 p.m.
28 "Factories Acts and Safety." E. W. Huddy. H.M. Inspector of Factories. Rotherham Technical College. 7.30 p.m.

Institute of Personnel Management

7 "Foreman Training." G. E. C. Eastman. Edinburgh. 7 p.m.
10-15 "Education and Training." London. (Course.)
10-15 "Staff Training in Retail Distribution."
11 "How to Hire and Fire a Personnel Manager." N. I. Bond-Williams. Coventry.
13 Discussion meeting for special groups. Birmingham.
13 One-day conference. Birmingham.
13 "Morale." W. B. D. Brown. Sheffield. 7 p.m. (Jointly with Institution of Works Managers.)
15-17 Joint Conference with Personnel Management Advisory Service of the Ministry of Labour. Harrogate.
20 "The Personnel Department's part in the creation of Teamwork in an Industrial Organisation." J. C. Stewart. Newport (Mon.). 6.30 p.m.
27 "The Scope and Practice of Personnel Management." Bradford. 6.30 p.m.
29-Mar. 4 London Regional Conference. Clacton.

Institution of Industrial Technicians

21 "Relationship Between Time Study and Motion Study." Engineers' Club, Manchester. 7.15 p.m.

Institution of Production Engineers

1 "Methods and Relations." Professor J. R. Immer, M.Sc. Central Library, Alexandra Road, Swansea. 7.30 p.m.
12 "Human Relations in Industry." W. P. Kirkwood. Mathers Hotel, Whitehall Crescent, Dundee. 7.45 p.m.
12 "Increasing Productivity, with special reference to the role of the Executive and Consultant in Industry." E. C. Gordon England. James Watt Memorial Institute, Great Charles Street, Birmingham 3. 7 p.m.
15 "Some Aspects of the Study of Working Methods." Miss A. G. Shaw, M.A. Building Department, North Staffs Technical College, Cauldon Place, Stoke-on-Trent. 7.30 p.m.
19 "The Graduate's Opportunity in Industry." B. H. Dyson. Star and Garter Hotel, Victoria Street, Wolverhampton. 7.30 p.m.
28 "An Assessment of Production Engineering Training." T. B. Worth. Cornwall Technical College, Trevenson Park, Pool. 7.15 p.m.

Institution of Works Managers

5 "Management Pay." Star and Garter Royal Hotel, Wolverhampton. 7 p.m.
6 "The Role of the Trade Unions Today." G. Middleton (Gen. Sec. Scottish T.U.C.). Thos. White and Sons Ltd., Paisley. 7.15 p.m.
7 "Current Aspects of American Management." J. C. W. Stead. Vane Arms Hotel, Stockton. 7.30 p.m.
8 "Problems of My Job." Discussion. Midland Hotel, Derby. 7.30 p.m.
12 "Human Efficiency in Factory Life." Starkie House, Starkie Street, Preston. 7 p.m.
14 "Industrial Relations." Royal Hotel, Bristol. 7.15 p.m.
20 "The Selection and Training of Foremen." H. J. Burns Morton. Franklins Gardens Hotel, Northampton. 7.30 p.m.
25 "Foremanship." T. E. A. Verity. Grand Hotel, Manchester. 6.30 p.m.

National Institute of Industrial Psychology

4-8 Course in Selection Methods. London.
5-6 Course for Supervisors (Office). London.
12-13 Course for Supervisors. Leeds.
14-15 Course for Supervisors. Hull.
14 Conference on Selection Methods. Hull.
18-22 Course for Management Trainees. London.
20 Follow-up Conference for Women Supervisors. London.
25 Course for Supervisors. Glasgow.
25-26 General Conference. Glasgow.
27-28 Course for Supervisors. Newcastle.
27 General Conference. Newcastle.
29 General Conference. Darlington.

Pendley Manor

5-10 Course for Foremen.
26-Mar. 6 Course for Foremen.

Urchfont Manor

21-23 "The Citizen of Industry." Course for young people entering industry.

Y.M.C.A. College for Adults

5-19 Course for young people from industry and commerce.

HOW TO MAKE TEA — *Continued from p. 353.*

faulty or dirty equipment. Infusers should be emptied and washed as soon as they are taken out. Multipots should also be washed out with boiling water immediately after use. They should be stored with the lids off and the taps open. Particular attention should be paid to taps, which must be brushed through regularly. Once a week each multipot should be filled with a solution of hot water and a suitable detergent, and left overnight or for a weekend. This reduces the amount of hand-cleaning and is far more effective. Never use soda or abrasives for this purpose; there are a number of substances specially prepared for this kind of cleaning on the market. All milk apparatus should first be rinsed in cold water and then sterilised with boiling water.

The routine for good tea-making is simple, but it requires careful observance by the staff. The Tea Bureau run an excellent one-day training course for industrial staffs, consisting of talks and films and a visit to the Lion Works, Woking, to see a tea-break in operation in the factory. The bureau is also willing to give advice on any problem affecting tea service, planning and operation of tea-bars or canteens, free of charge, and will visit your works if necessary. A well-planned and equipped tea centre and a trained staff will ensure that a cup of tea plays its full part in getting increased production in the factory.

MANAGEMENT BOOKSHELF

How to Run a Hostel

Hotel and Institutional Housekeeping. Edited by O. G. Goring. Practical Press Ltd. Cloth, 12s. 6d.; card, 8s.

THERE is plenty in this book for firms who run hostels or similar residential establishments for their employees. It is the first authorised textbook on professional housekeeping to be published, and it deals with the whole range of housekeeping duties, from the humblest jobs of the maid to the important responsibility of head housekeeper.

The subject of cleanliness receives a lot of attention. A detailed list of cleaning equipment, with notes on its use and care, is followed by a comprehensive review of cleaning agents, with recommendations on the quantity of these to buy and to issue.

Advice given to maids under the heading "The Importance of the Personal Factor," is applicable to employees in a much greater variety of work: "Personality develops as the character of the person develops in attractiveness, in reliability, in thoughtfulness, in thoroughness, in loyalty. These are the qualities which make . . . good workers in any industry or profession . . . One of Shakespeare's oft-quoted lines is: 'Assume a virtue if you have it not.' It is possible to cultivate these characteristics."

Appendices on how to apply for a job and on elementary first-aid are also of general interest.

Pay Systems

Payment by Results. Studies and Reports, New Series, No. 27. International Labour Office. 7s. 6d.

THE I.L.O. prepared this report to provide Governments, employers, etc., with up-to-date information concerning the various types of systems in use. Will be invaluable to employers and workers who are considering whether or not to adopt a system of payment by results or to modify one already in operation.

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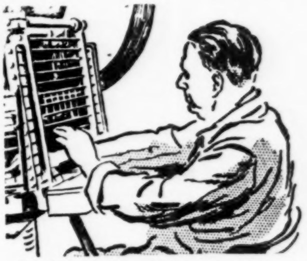

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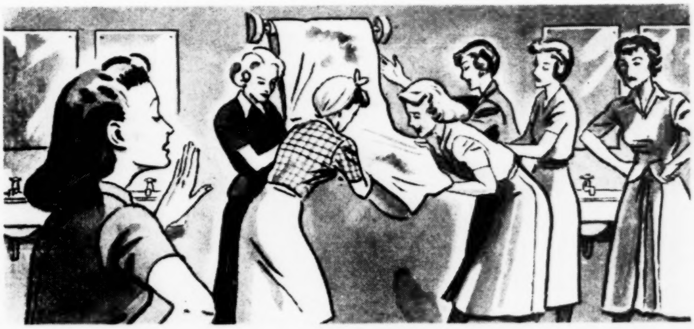

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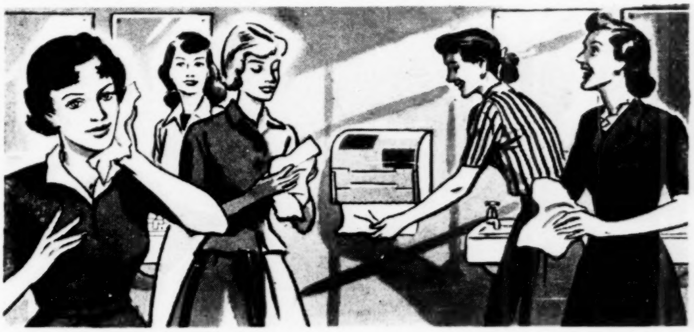

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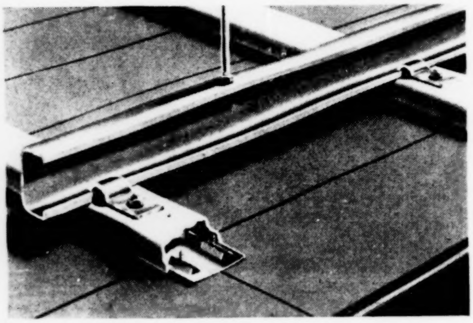

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Printed for the Proprietors, The Shaw Publishing Co. Ltd., 180 Fleet Street, E.C.4 (CHA. 8844), by the Sidney Press Limited, London and Bedford.
February, 1952. Advertisement and Editorial Office, 180 Fleet Street, London, E.C.4.